ATARI COMPUTER ENTHUSIASTS

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DECEMBER/JANUARY 1987

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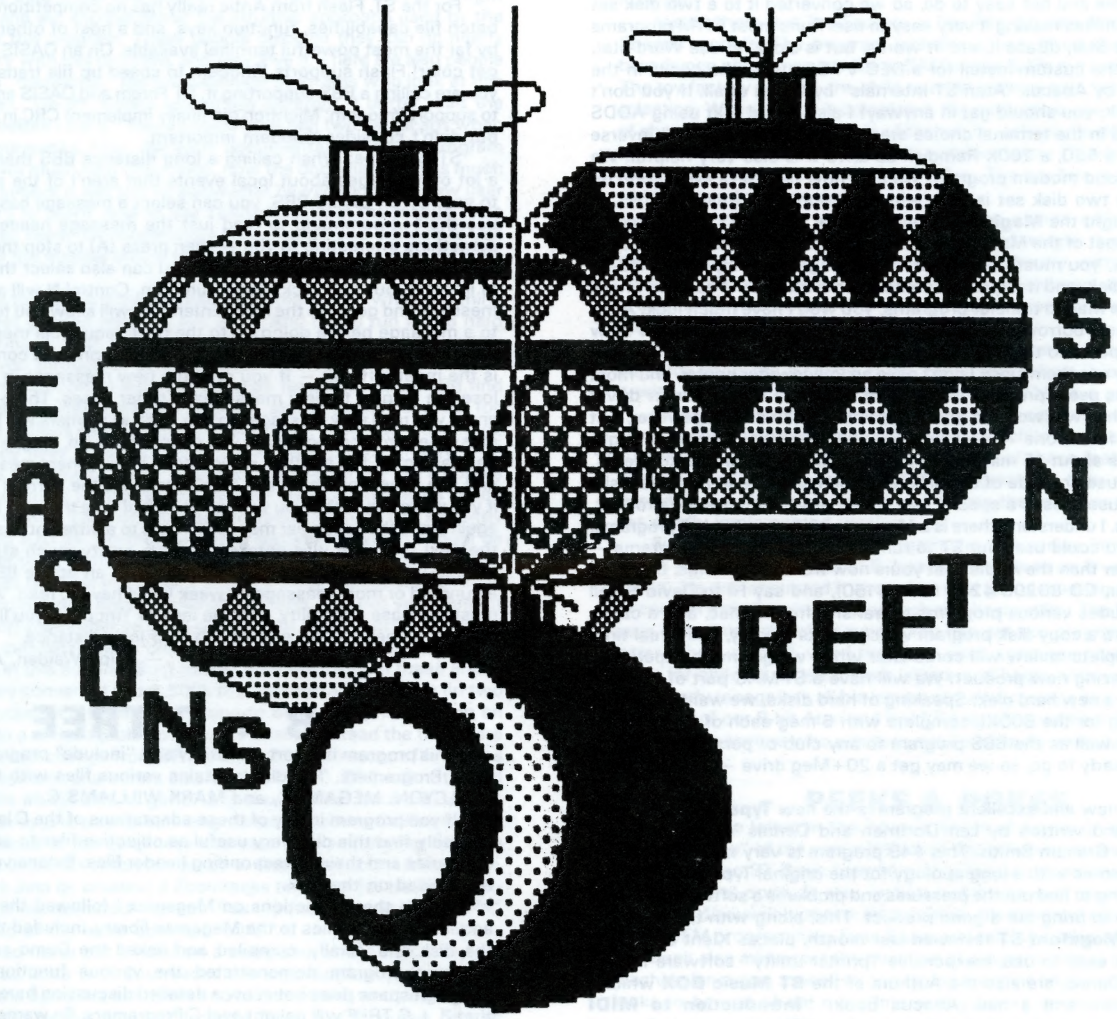


News and Reviews

by Mike Dunn, Co-Editor

This has been a very busy month for ST users with some very major new products being released. The newsletter is also a week late because the typesetter and printer couldn't do it over Thanksgiving. This is the Dec/Jan issue; next issue in Feb.

For the club, some major changes: New officers have been nominated for the next year with elections next meeting. Kirt Stockwell is running for President and Graham Smith for Vice-President. As you may remember, Kirt was our President several years ago, and Graham is a Middle School Art teacher who specializes in reviewing drawing and similiar software-he is a fine artist. Jim Bumpas, who is very busy editing the newsletter (he corrects our spelling and other errors and cuts articles to a reasonable size) has turned over the ST library duties to our new **ST librarian Ralph Walden**. Ralph is our BBS Sysop, as well as an excellent programmer, author of DV-C and ACE-C, the ACE BBS system, and many fine utilities for the ST. He, with the aide of Mike Rogers, have reorganized the library, and now have a 10+ page documented list of our ST disks ($1). They have also made a wonderful **BEST of ACE ST** disk for $10 with has many great utilities. Details in articles in the newsletter. Ralph's address is 1821 Jefferson Eugene, OR 97402. Please do not call him on the phone, but feel free to contact him through the ACE BBS.

Other new disks for the ST include two from Rita Plukss from Australia and Melbourne ACE. Rita is an artist and Mandelbrot expert. She has donated her copyrighted disks of art to us to distribute: **Rita's Art Gallery,** which is a slide show of some very nice art; and **Mandelbrot Slide Show** — a very interesting group of mandelbrot color pictures showing mother and daughter projections. ($10 each, $15 for both on a double sided disk.)

The most interesting public domain disk we recieved this month might be the **CP/M** emulator. Originally sent out by Neil Harris from Atari, this German product came on one disk you had to convert to CP/M format — took much time and not easy to do, so we converted it to a two disk set with various utilites making it very easy to use. Runs most CP/M programs such as Word-Star, dBase II, etc. It works, but is slow. To use Word-star, you can use the custom install for a DEC VT-52, using the codes in the book put out by Abacus "Atari ST Internals" by Gerits et all. If you don't have this book, you should get in anyway! I also found that using ADDS Regent 20/25 in the terminal choice area worked well except for inverse display. With a 520, a 200K Ramdisk as drive D is also very helpful. We have a very good modem program. We also now have a CP/M section on the BBS. The two disk set is $15, with directions and utilities.

I also bought the **Magic Sac** Mac emulator for the ST. This amazing divice runs most of the MacIntosh software better than the Mac does. To get it to work, you must first be sure you can get the Apple 64K ROMs and a Finder disk, and it requires a monochrome monitor. If you don't have a friend with a Mac to transfer programs, you won't have much luck. After recieving mine, I borrowed a friends MAC and couldn't believe how slow it works compared to the ST. I could get most programs to work fine, but couldn't really use them since I don't have an Imagewriter printer, and most Mac programs use a printer. I understand there is a Epson printer driver somewhere that will work so you can print out like an Imagewriter, but have not yet found one — do any of you know about one which might work? It takes about 15 minutes to format and transfer a disk to the ST, you can only use one side of the disk, and you cannot read the Mac disks directly because it uses a special two speed drive. An amazing product, never-the-less. I understand there is a Mac program to run Apple II programs, so I guess you could use your ST to run Mac to run Apple II programs — probably faster than the Apple! Get yours now from Data Pacific, 609 East Speer, Denver, CO 80203-4240 now ($150), and say Hi to David Small for ACE. Includes various programs to transfer from a Mac, and a cable, special format, a copy disk program which works quickly, and a real time clock. A complete review will come later when we get more experience with this amazing new product. We will have a ST-MAC part of the BBS when we get a new hard disk. Speaking of hard disks, we want to sell our Supra 10 Meg for the 800XL complete with 5 meg each of 8 and 16-bit programs, as well as the BBS program to any club or person wanting to have a BBS ready to go, so we may get a 20+Meg drive — contact Ralph Walden.

Another new and excellent program is the new **TypeSetter ST Elite** from Xlent and written by Len Dorfman and Dennis Young, reviewed elsewhere by Graham Smith. This $49 program is very nice and easy to use; it also comes with a long apology for the original Typesetter ST that is worth reading to find out the pressures and problems a software company goes through to bring out a good product. This, along with the also very easy to use **Megafont ST** reviewed last month, places Xlent at the top of the list for easy to use, inexpensive "printer utility" software for the ST. Len and Dennis are also the Authors of the **ST Music BOX** which I have not seen, and a new Abacus Book, **"Introduction to MIDI Programming"** which includes the complete "C" source code for part of the above program! Another really good company is Abacus — I sent in $10 for a backup copy of **DataRetrive** beause the ACE mailing list is on it, and received it in return mail! New books announced include **Atari ST for Beginners**, a book sorely needed, and **Atari ST Disk Drives** — the title makes me drool, especially if it encludes infomation on how to hook a IBM type hard disk to the ST.

For all of us 8-bit owners, we have two new **Best of ACE** disks of programs from the Newsletter — see Larry Gold's article. The fabulous **Turbo BASIC** for the XE/XL computers is selling very well, and if you do not have one yet, consider ordering it. Speaking of TurboBASIC, we recieve a very nice letter from the Dutch Atari Group clearing up some misconceptions about this wonderful product. As you know, we recieved our documented two sided copy from the Western NY Atari Group, who recieved it from a Dutch group, and translated the documentation, etc. Nic Oosterbaan from the Dutch Atari group (not the same group that the NY group recieved it from) informs us that Turbo Basic is copyrighted and not in the public domain. It is actually from a German Atari Magazine "Happy Computer" that has given user groups, including ACE permission to provide copies to their members. It is also not Dutch but German. Sorry about the previous misinformation.

All of you have a nice Holiday Season, and we will write again in February.

Josepha Haveman, one of our long time members, will be having another exhibition of her Atari generated computer art at an exhibition of computer art, **PIXEL PIX,** Nov 16 to Jan 31 at PC-TIME, 1877 Mission St, San Francisco. If you are in the area, go and say Hi to Josepha.

BBS NEWS

I occasionally get asked what I think is the best terminal program to use. On the 8 bit Atari, Express is probably the most powerful, and one of the cheapest since it is freeware. Version 3.0 (currently for 850 users only) can transfer files much faster then previous versions, and does support CRC for more accurate file transfers. But it's also buggier — you can expect it to crash occasionally, especially during an aborted download. Written by Keith Ledbetter, an updated version is being held up while he works on an ST version of his BBS. So far, I have not found an 8 bit terminal program supporting Ymodem file transfers (a faster way of transferring files).

For the ST, Flash from Antic really has no competition. With extensive batch file capabilities, function keys, and a host of other features, this is by far the most powerful terminal available. On an OASIS BBS, you'll even get color! Flash supports Ymodem to speed up file transfers — provided you are calling a BBS supporting it. ST Forem and OASIS are the main BBS's to support Ymodem; Michtron did finally implement CRC in their 2.0 version, but didn't consider Ymodem important.

ST BBS tips: When calling a long distance BBS there are frequently a lot of messages about local events that aren't of the slightest interest to you. On an OASIS BBS, you can select a message base you want, and use the (+) command to read just the message headers until you see something interesting to you — then press (A) to stop the scan, and read the entire message. On ST Forem, you can also select the message base of interest, but they lack a scan function. Control N will abort the current message and go on to the next. Entering R will allow you to read the replies to a message before going on to the next sequential message. ST Forem will allow you to back up if you inadvertently pressed control N. Michtron is the most difficult — if you read the new messages in one base, it will lose the pointer to new messages in other bases. There is no mail base, and if you read new messages to you, then all pointers will be lost to general messages. You cannot scan, you cannot back up, msg = could be in one base and msg † in another, so you don't know where messages begin and end in a base. You can press SPACE to abort the current message — but if you make a mistake, you will spend a lot of time trying to find the message again since the space bar may switch you to a different base if that's where the next message was entered. You are pretty much stuck with having to read every message in every base — on an active BBS this could be a hundred or more messages a week you'd have to read. With their limited message base capability, and the lack of Ymodem, you'll end up wasting a lot of money calling a Michtron BBS long distance.

— Ralph Walden, ACE BBS SysOp

B + C TREE

This program is a sort of a utility and "include" program disk intended for C Programers. The disk contains various files with their equivalents in ALCYON, MEGAMAX, and MARK WILLIAMS C.

If you program in any of these adaptations of the C language, you will probably find this disk very useful as objective files to add to the various C libraries and their corresponding header files. Extensive documentation is included on the disk.

To use these functions on Megamax I followed the procedures and added the object files to the Megamax library, included the header file on the disk and, finally, compiled and linked the Demo source code. The resulting program demonstrated the various function adequately — although space does not allow a detailed discussion here. Suffice it to say that B + C TREE will delight avid C Programers. Be warned, however: This is not a disk for beginning programmers. Some familiarity with the Gem is mandantory and even assumed. But if you are a somewhat experienced programmer and are willing to work with the implimentations on this disk, you will not only increase your knowledge of C and Gem, but also be open for the more complex programing functions this disk allows.

— Graham Smith

BUMPAS REVIEWS

ZOOMRACKS 2

My favorite list-keeping program has been improved. **Zoomracks** (QuickView Systems, 146 Main St., Los Altos, CA 94022. $149.95 regular price; $119.95 until December 25; $49.95 upgrade to v.2 from v.1 until Dec. 10, then the upgrade will be $79.95) has always been a great, intuitively easy, and flexible program to use. You always have about 3 ways (mouse, command menu, keyboard) way to perform any function, and usually at least 2 non-destructive ways (Esc, or toggle the last command you gave) to get out of something you decide you don't want.

Zoomracks 2 offers several improvements and additions. There is a new menu design appearing at the bottom of the screen. This menu is more clearly designed and easier to use than before. There is more extensive Help information which can be displayed from the program disk. The Help key gives you general help information; "Shift-Help" gives you specific help information about the particular command you are on. The top of the screen now displays a line indicating the racks which you've loaded into memory. Macros are now more enlish-like and easier to edit. A 4-function calculator has been added, and you can move calculations into and out of fields. You can do sums of the contents of racks and fields. The output forms utility is very powerful. Editing the look of a form is easy. Labels, mail-merge and report formatting is a snap. The ability to import (and export) comma delimited files is added. The name of a Degas file in a field will toggle a full screen display of the picture with a keystroke. The cut, copy, paste and replace functions have been expanded by making them more widely available. The search function now extends to all lines in a field, instead of the first line only. If you go away from the console and don't use Zoomracks for 15 minutes, it will automatically save your work and reenter the program.

Since my review of Zoomracks 1, I've learned there are 2 kinds of people out there who've tried to use this program. There are those who jump right into a program and are excited about the intuitive approach used by the programmers of this program. These people discover they can do nearly whatever they try with this program, and they love it. There are also people who are used to "traditional" file-management programs who look at this program and say "Uh-oh. Here's something different. I better read the documentation before I start!" These people have had two handicaps when trying to use Zoomracks. First, the early documentation to this program was very poor. Not much help there. Well, now the documentation is much improved, but I believe it will still be somewhat bewildering to a new user who wants to try to 'learn' how to use Zoomracks from the manual. The program may well seem overwhelmingly complicated and difficult to use if one pores over the manual before trying to manipulate list data with the program.

My advice is to use the program first. Try to make it do what you think it should do. I bet you the program will do it. And if you run into a hard place after starting up with the program. Referring to the manual at this point will lead you through to some light on the subject.

The program disk comes with some handy templates you might find use for. QuickView Systems plans to provide "starter packs" or disks full of templates for various uses: schools, accounting, business, collectors, writers, etc. They have ideas for over a dozen such packs already.

Zoomracks still won't dial my phone for me. And there are a couple of other improvements I want to see made. I am disappointed by its failure to address more than 519k of data buffer space even in my (recently upgraded) 1-meg 520 ST. Seems like this is something which should be attended to rather soon, especially now that the 2-meg and 4-meg machines are on the market (at least in Europe). And the program should be made more easy to perform operations on ranges of data. It is not very elegant to have to turn off the printer to get a print-out of only a portion of a list. And it's a little cumbersome to create a new list and cut and paste the items you want in this sub-list. So it needs more flexibility in these areas.

I just recently converted about 500k of data from a Macintosh (in two files) to Zoomracks for a friend. He's going to be keeping his data on an ST now. I ran into a serious problem when ZR2 failed to read the file. There is an undocumented change from ZR1 to ZR2: ZR1 will accept file names with non-alphanumeric characters (i.e., M__LIST.ZRX). ZR2 will not. I had to rename the file MLIST.ZRX to get ZR2 to take it. That hitch caused me a couple days' delay and a couple of long-distance calls to California. But my friend is amazed at the quickness and ease of manipulating his data with Zoomracks on the ST when compared to **OverView** on the Macintosh. I transported the data by creating a Zoomracks template for the data. You can also use "comma delimited" format. This type of file must have ".DTA" extender, instead of the more common ".DAT".

My friend had never put a hand on a computer before he came over to see what I had done with Zoomracks (his organization had someone else managing the data). He sat down and began editing and adding data to his list and said he felt very comfortable doing it. Of course, he's an "intuitive" sort of guy. He kept the manual handy as a reference when he forgot a command. After the first couple of minutes, I went off and played with my 2-year-old while he played with Zoomracks.

WARGAME CONSTRUCTION SET

We just received this program from SSI, and have not had a chance to fully test it out. It appears to offer great flexibility in terms of drawing a large map, as well as controlling more than a dozen unit characteristic parameters. No real "rule-changing" allowed, and the copy protection makes the disk very "touchy" to load. Every second or third time I have to clean the heads on my Atari 1050 drive (the one I let my 2-year old use — sometimes he licks his disks before he puts them in the drive!). But it always loads up on the Indus. It comes with 8 "canned" scenarios in addition to the editor. This might more accurately be called a "Scenario Generator," but it seems to comes closer to a game construction set than previous programs in this genre (including **Combat Leader, Kampfgruppe**, etc.

FLASH KERMIT

Antic now offers an enhancement to **FLASH**. An accessory which permits you to use the Kermit protocol. It costs $25, and is a very complete implementation, including batch file transfers. The accessory also includes a bonus: REMOTE operation of your ST. It's almost a full-blown BBS system, with password protection, file-locking, messages and bulletins. This is one of the most cost-effective programs I've seen. I use it a lot. It's even more complete than the Kermit program on the Alpha Micro mini-computer at work where I use the ST as a terminal on that system. The Kermit protocol will work without Flash. But the remote operation requires Flash in order to function. If you telecommunicate, this program is a must!

First Shapes

First Byte software ($50) introduces young children to shapes. My 2-year old plays with this program more than any other. The program is protected, but you can work from a back-up disk, using the original disk only as a key, or master disk. So, once you get it started, you can let the kids go.

Inside there is a Toy Factory, a Toy Fair, Make a Match Game, and a Shapes module. The program includes a very good speech synthesizer based upon phonemes (similar to SAM on the 8-bit, but with clearer diction). The toy factory permits the child to make various toys from among a menu selection. When the toy is completed, the program reviews the child's choice of shapes for the various parts of the toy, i.e., wheels, body, front, windows, etc. for a truck. Then the program names the toy ("Alvin the Truck") and asks if you want to put it in the Toy Box. The toy box is used to save the various toys for later viewing.

The Toy Fair has several carnival-type games which the child can succeed at by correctly identifying the 'round' shape, the 'pointed' shape, the "largest" shape, etc. Actually, I had difficulty with a couple of the "largest" shape questions. Two of the shapes shown seem very similar in size to me (rectangles with different dimensions, but seeming to cover a similarly sized area.

The Make a Match Game is a game of concentration where you click on cards revealing a shape. If you remember where it is, you can match it with the same shape under another card. This is a good game.

There is also a Helper menu which offers the parent quite a broad range of customizing options, including using the child's name in the program, customizing reward statements, etc. Some of these features seem to be "dimmed out" on my version of the program, so they may not be fully implemented. When you buy it, ask to see the program demonstrated to get a fully implemented version.

First Byte also has other programs in this series, including KIDTALK, MATHTALK and SPELLER BEE. I gave MathTalk to an 8-year old I know to review. He demonstrated it at our last user group meeting. These programs all contain a similar phoneme speech synthesis utility. The **KidTalk** program says everything the child types. You can set the program to speak each letter typed, or each word typed, or each sentence typed. This is really great for children to learn their letters and begin with words. My 2-year old already recognizes all his letters and many words just by typing on the keyboard of our 8-bit Atari and our ST. I recommend First Byte educational programs to anyone who wants to see some really imaginative educational software.

PEEKS & POKES

This is the latest in the Abacus series of books on the ST. It's not a "memory map" of the sort with which we're familiar from the 8-bit Ataris. It's more of an ST Basic tutorial with instructions on how to program all the peripheral ports. It also includes chapters on "memory structures," including discussion of disk information, file formats, etc. Other chapters cover GEM programming from Basic and talking to the operating system. The book also addresses the question of programming in LOGO, C and 68k machine language, as well as combining machine language with Basic. This looks to be one of the more interesting books on the ST.

POWERPLAN

PowerPlan (Abacus, $80) is a very powerful spreadsheet. It's fully integrated into the GEM desktop. Its power is most evident in the size of template which it may contain: The documentation claims over 65,000 rows by 65,000 columns. I did not test this feature.

I did, however, move one of my templates from VIP to PowerPlan. The documentation does not tell you how to do this. The manual does explain how to transfer data from DataTrieve (Abacus' filing program). PowerPlan will accept an ASCII file in which each cell's contents is followed by a carriage return. So I just put a VIP template into ST Writer, used the global replace function, and printed a disk file with Left, top and bottom margins set to zero.

PowerPlan uses spreadsheet conventions similar to those used in the Graphic Artist. Those familiar with the Lotus/VIP family will find cell addresses referenced with "R" and "C" (for "row" and "column'), instead of the letter/number grid. This permits you to design relative cell addresses such as "rc-8:r+1c-1." This address will define a range beginning on the row you're on, and 8 columns to the left and ending on the row below you and one column to the left. The programming advantage of this type of cell address is that the program doesn't have to do so much figuring when you copy this reference (or a formula containing this reference) into new cells.

The program is smaller in size (by a factor of 5 or so) than VIP. But it appears to have a much larger data buffer. There seems to be no macro facility, and one should not expect to find the database functions of VIP. I was surprised to find a desktop-type calculator built into the program. But after using it, I see it is handy. Calculations on the spreadsheet are not quite as easy to do as in VIP, if you want to see instant results. The entry of data by the keyboard in PowerPlan seems very slow to me. But the mouse is very well integrated into the program, and this speeds up many operations which are slower in VIP, such as defining ranges and moving around the screen. The program includes most of the mathematical functions you will ever need, and even includes some built-in statistical functions.

The graphing utility will produce 3-D bar graphs, and you can type alphanumeric data in any location on a graph window. These are the only two advantages over VIP graphs. I was not able to put grid lines on a graph, and the y-axis scaling does not seem to be very useful. I had bars which were 25 and 111 in height. The first mark on the scale seemed to approximate the 25 level, but the 111 bar didn't quite come up to the 4th mark. You have to type in all the data labels and any numbers on the axes. The freedom to put text anyplace on the graph has its drawbacks, too: I find it difficult to line up all my labels on the same line. But the 3-D graphs are sure prettier than the VIP graphs. And the line graphs show solid and shaded areas under the lines. I never use VIP line graphs because they are so ugly.

PowerPlan will be a good choice for anyone who does not need database functions (Abacus says, "Use DataTrieve!") and wants to manipulate spreadsheets containing large amounts of data since its data buffer is much larger than VIP's. I did not test the performance of the program with a large template, so I do not know if it becomes more slow with large amounts of data. VIP does slow down noticeably with large templates, so I won't be surprised to learn there is some slowing in this program also.

— Jim Bumpas

USER HINTS

ST ENGLAND

Jack Schofield, the editor of the "Computer Guardian" column in the **Guardian** (formerly known as the "Manchester Guardian"), one of the leading papers in the UK, sent us a half-page spread he did on the Atari ST. He says the ST "hogged the limelight" at this year's Personal World Computer Show in London last September.

The most obvious new products included 2-meg and 4-meg STs selling for #149 and #459 ("#" = English Pounds). That's probably about $1800 for a 4-meg machine. The Blitter upgrade was shown at a price of †0. The IBM box was shown containing an Intel 8088 and 512k RAM for $300 (I don't know why this price was in dollars!). He called the IBM box a "downgrade."

Kuma Computing showed a hardware enhancement containing a 32-bit T414 "Transputer." For about #450 you can have an ST 20 MIPS (millions of instructions per second) system. The Mac emulator was also there, as well as a software emulator of the BBC computer, Acorn, based on the 6502, for #9. If they can emulate the BBC 6502, why not the 8-bit Atari? There was also ST-Pluto. Fast Basic by Computer Concepts comes on a cartridge, leaving almost all your RAM for program space. VME Trade Organization also showed their d/os which runs software on DEC minis and Alpha Micros.

The article finishes with a list of all the software the ST can run: native TOS and GEMDOS; CP/M, MS DOS, Macintosh; and 3 multiuser, multitasking business operating systems: BOS, OS/9, and VME-d/os. And rumor has it Atari is already running UNIX in Germany.

STuff

Our ST Group meetings are every 4th Wednesday of each month (we've been meeting regularly since December, 1985) at 7.00 pm. The location is Amazon Community Center, in the south crafts room.

TYPESETTER ELITE

The introductory section of the manual is very apologetic about the original ST version of Typesetter and the initial rush to get out the product etc., etc. Consequently, this section gives considerable background concerning the history of the product and it's translation to the ST line. This was helpful in understanding the user "unfriendliness" of the first version.

Those who found the original ST translation of Xlent Software's TYPSETTER Program awkward and confusing — and who didn't — are in for a pleasant surprise with TYPESETTER ELITE. This release is everything the earlier version should have been. In short, it is an easy to use, straightforward typesetter program with a lot of power for the price. There are no frills, but there is a wide choice of font styles and an excellent printer face. Used in conjunction with RUBBER STAMP, the user has a powerful set of utilities for placing print and graphics to a page.

There are 23 System fonts available plus an assortment of Graphic fonts in the Degas format. All of these styles can be sized and placed on the page in various formats, as well as mixed. In Addition, there are a number of drawing commands which can be easily incorporated into the page layout.

This package is not as complete as The Graphic Artist nor does it have some of the features of Easy Draw. On the other hand, It is not nearly as spendy either. It does what it is supposed to do very well and can be recommended to anyone seeking a type layout package of moderate power at a fair price. It should meet the demands of the average user without serious reservations. A word of caution though: Read the manual carefully.

— Graham Smith

THERE'S ALWAYS TIME

There's another battery powered time clock available for the Atari ST series computers and it's a good one. This time clock is designed and sold by an Oregon company, Micro-Time Electronics, P.O. Box 125, Merlin, Oregon 97532. Their phone number is (503)476-9509. I tend to favor internal clock cards rather than those taking up my one-and-only cartridge slot since there are other things I'm saving that slot for.

This clock card is easily installed by removing the cover on the ST, pulling the keyboard controller chip, inserting the controller chip into the clock card, inserting the clock card into the the place the controller chip was removed from, sticking the battery case onto the RF shield and replacing the cover.

I won't go into any more detail on installation since the instructions supplied with the clock card are very easy to understand and very complete. I do have some comments about the instructions. First, there is a note in instruction number ten on page two telling you not to remove the foam mat from the clock card. HA! By that time, I, and almost everyone I know, would have taken the foam mat off to examine the unit. Please! Those of you writing instruction, warn me first, on the first page, at the top, in BIG UNDERLINED LETTERS, in red if there is something I shouldn't do!!!

Next, the instructions say to check to see if any components touch the underside of the clock card and if so, cover them with electrical tape. Don't bother to check to see if they touch. If they are CLOSE, cover them, or the bottom of the clock card with electrical tape. Tape is much cheaper than shorting out your computer. Last, instructions of this type always tell you to be sure you are grounded to avoid static electricity. This is the first I've seen to tell you how to do it. Touch the electrical wall switch plate attachment screw! By the way, this works unless the wiring is not to code or the screw is painted over.

Back to Micro-Time's clock card. It works and it works well!!! It appears to be a very professionally done unit, neat and simple looking. It also allows some flexibility in charging rates of the batteries. It's initially set up for the user who only uses the computer a few times a week, (no one I know). The batteries will recharge in 3 to 4 hours. If you use it daily, 4 to 6 hours or more, you can clip off one specified resistor to reduce the charging rate and prolong the battery life. This is the way I'll use it.

Also included with the Micro-Time clock card are some programs on a disk, one is to be used when initially setting the time/date. Another, AUTOTIME.PRG, should be in an AUTO folder on each disk you boot from and since the program is only 65 bytes long, that is usually not too great a hardship. Also included are calendar and clock accessories and a program, MONO_CLK.PRG from ABACUS SOFTWARE which displays the digital time in the upper right hand corner of a monochrome monitor.

I spoke to Dan Freeman, the designer of Micro-Time clock card, at the Atari Expo in Portland, Oregon and he mentioned a problem with CONTROL.ACC. If you use CONTROL.ACC you should expect to lose a few minutes a day. This is due to a truncating of seconds then resetting the computer. This is apparently true with any clock card you use. Dan also mentioned that Micro-Time Electronics will continue to make additions and enhancements to the use of the clock card. He seems very conscientious about creating a good product and insuring customer satisfaction. If you are considering the purchase of a battery powered clock, you should definitely keep this one in mind.

When you do contact Micro-Time Electronics, ask about the "Quick Cards!" These are command and function summary cards for ST-Writer, ST-Talk & Flash and are an excellent aid for those of us with less than a perfect memory.

— Steve Golden

ZOOMRACKS 2

Ralph Walden and I got a hold of Zoomracks II to try and see if we could use it with the library. This gave me the opertunity to try it, so I thought I would write my impressions of the program.

First off, I am not a computer whiz, I am barely competent in the use of this big ugly monster. For me to be able to use a program effectivly, it has to be extremely user friendly with good documentation. If it is not, I tend to become easily frustrated. This brings us to Zoomracks.

I bought the first version of Zoomracks because everyone said it was easy to use and the best filing program around. I found it cumbersome and hard to use. It took me quite a while to learn to use it, but when I learned it, it proved to have several worthwhile options. I started useing it with my school work (even at my advanced age I have dared to return!!) to keep outline notes and class notes . It seems to work well for this, so I was extremely interested in the updated version.

Booting up Zoomracks II, you can tell it is a vastly superior program to the earlier version. It is extremely user friendly, in fact, it takes no time at all to learn how to use it. The racks can be accessed by the mouse now in fact almost every function can be done with the use of the mouse. The help menus are clear and easy to read and the new documentation is clearer than the old version.

Ralph and I want to use the program to keep the library list. Sadly, we find that we can't use it because we continually have to access disk directories. We did, however, start a mailing list. With a form letter, this should help us when orders for disks start pouring in.

I wasn't content just to use the program with the library. I have transfered over my files from the first version. This was extremely easy to do, and I found no lost or scrambled data. One of my text fields is 220 lines long. This put the program to a real test. It created no problems, and handled all the data like a pro.

I had some trouble figuring out how to use the second disk drive. I reread the docs and found out that rack 0 loads info from an alternate drive. To do this, boot up the origional program, go down to the Alternate E menu, select control k (with the mouse if you're like me) and then press key B. This will load an existing file into the empty rack. With the files on an empty disk, you can put in a lot of data. My Advthry rack (rack name) has over 30,000 bites of information in it at the present time. Since Zoomracks creates an automatic back up file this was instantly turned into 60,000+ bites. This file would have been impossible to maintain on the program disk since the initial information all but fills it.

My wife knows less about computers than I do, but I wanted her to learn how to use this program for household expenses. I took the checks template which comes with Zoomracks II, and entered a few bogus checks to show her how it was done. Within a few days, she had entered all of our checks, deposits and bank charges. This was unthinkable for me, until she got hold of this program she had refused to continue with a computer record. I had previously set up a check book on DBMaster, but we found it inconvenient and hard to page through. With the sort functions available, using Zoomracks II is a snap.

I have been watching the club BBs to see if any public domain Zoomracks templates appear. To this date, I have seen none. If any of you folks out there have any templates, send them in. This will help others use the program to its fullest potential and may help the author sell more copies.

There are a lot of other technical changes I am sure Jim Bumpas will write about in his review. For me, the following things are evident.

1. Zoomracks I was hard to use and awkward;
2. ZOOMRACKS II is easy to use;
3. The upgrade from I to II is moderatly expensive, but well worth it;
4. Zoomracks II is well worth the cost of the program if you need a powerful data base/file system.

— Mike Rogers

SHOPPERS GUIDE

How to Select the Best the ST Has to Offer

The trickle of ST productivity software has become a torrent, so you probably feel flooded by promises from the dozens of programs on computer store shelves. As a consumer, your job is to sift through them and find the right data base, graphics, or financial-modeling solution to all your troubles. The question has changed from "Where is the ST software?" to "Which program should I buy?"

But ST software is often much more difficult to evaluate than software for other computers. To be truly productive, programs must not only produce the desired results, they must also be well integrated into the ST's GEM operating environment. By paying close attention to the details, you'll be able to distinguish useful tools from useless toys. Four key elements you should examine in a new program are: 1) how it adheres to ST editing conventions, 2) how mouse and keyboard movements flow together, 3) what shortcuts are provided for experienced users, and 4) how it reduces repetitive typing and having to remember all kinds of esoteric commands and procedures.

Editing Conventions

Conventions for editing, deleting and inserting text are built into the ST operating system. Editing procedures, such as backspacing, deleting, inserting, should be consistent from program to program. Whether the software is a word processor, a spreadsheet, or a graphics program, you should have the same text editing features available.

Here's an editing features test to try out in the store, before you purchase new software:

1. Place the text cursor anywhere in a word and press the Backspace key. The letter to the left of the cursor should disappear, and the word should close up around that space.
2. Place the text cursor anywhere in another word and press the Delete key. The letter under the cursor should disappear, and the word should close up around that space.
3. The Insert key should insert blank spaces under the text cursor. The letters to the right of the cursor should all shift to the right.
4. You should be able to restore the original word by using the Undo key or from a command in the Edit drop-down menu.
5. Finally, select a word by moving the mouse pointer to the beginning of the word, and while holding down the left mouse button, move to the end of the word and release the button.

A program passing this minimum test has editing commands consistent with programs like 1st Word, ST Basic, and others already on the market. But as we will see later, if a program features logical and practical extensions of these commands, you should study them closely to see if they make sense to you.

Mouse and Keyboard Work Flow

Evaluating new software based on how well the mouse and the keyboard work together may take some diligence, depending on the complexity of the program. The idea is to avoid hopping from the keyboard to the mouse and back again for frequently used operations. Instead, you should look for programs that use either a sequence of mouse maneuvers or a sequence of keyboard maneuvers for often-performed procedures.

Perhaps one of the worst instances of mouse-and-keyboard gymnastics occurs in 1st Word. The program places inordinate demands on your hands when you are editing text, as many of the commands are only available through the drop-down menus. There is no way around this problem in 1st Word, but programs in other categories avoid such keyboard-and-mouse games.

My favorite programs are those which work almost entirely in a single entry mode, such as Flash! Except for entering text there is no practical need for the hand operating the mouse to move to the keyboard. Occasionally you still need to press the Alternate key in conjunction with other keys, but for the most part all commands are accessible with the mouse and/or keyboard.

Keyboard Command Shortcuts

Another point to check in a new program is whether it contains keyboard alternatives to the commands in the drop-down menus.

Except for Cut, Copy, Paste, and Undo, keyboard commands are rarely consistent from one program to the next. One programmer's name for a particular function may be different than another's. In some cases, the programmer will chose mnemonic keys — the command letter being the first letter of the keyword, and others use keys in alphabetical order. While I am more likely to remember the mnemonics, I could soon memorize the other commands if I used the program enough.

Do not feel pressured to master keyboard commands immediately. Once you have established a work pattern with a program, keep a lookout on the menus for keyboard commands. Slowly work the keyboard commands into your work habits, provided they improve your productivity. The goal, after all, is to accomplish more work in less time.

Minimum Typing Requirement

When you are working feverishly on a particular project, your train of thought is often interrupted with file-maintenance chores, such as saving your work every 15 minutes. A useful software feature is one that spares you from recalling the document name and retyping it at each save. The in-store test on a program, should go something like this:

- Start up the program and enter data (numbers in a spreadsheet, words in a word processing program, or a data entry form in a data base program).
- Choose the Save as. . . command.
- Assign a document name (your name or "test," for example) and save the document.
- Make one more entry or edit something in the document currently on the screen.
- Again issue the Save As. . . command.
- The dialog box should appear with your original file name. If so the program passes the minimum typing test.
- Try to rename the program by first pressing the Escape key then typing a new name. If the old one disappears and the new letters you type appear in the box, the program will probably pass the editing conventions test as well.

Minimum Human Memory Requirement

As long as your using your ST's powers to help reduce your typing, you should expect the ST to help you rely less on your memory. Document names are pieces of information that a program should keep track of for you.

ST software from Atari does a good job of keeping track of document names. When you choose the Open. . . command from the File menu (from within a program), a dialog box appears on the screen, with a directory of documents that can be opened from the program. To open a document, you just scroll the name into the window and double-click the pointer over it. (You can also select the name and click the OK box, but that takes more

mouse movements than necessary.) Be on the lookout for sloppy programming in regards to dialog boxes.

Other Evaluation Tips

Beyond the special requirements for ST software, there are other principles to follow when shopping for software, regardless of the computer or program category. Of particular importance is the software's documentation.

It is difficult to judge a program manual while thumbing through it in a store. On quick perusal, a manual may seem to have everything a good manual should have: screen illustrations, a lengthy reference section for experienced users, and an index. But when a beginner tries to learn to use the program from the manual, there may be gaps and incomplete descriptions of key points. The way to avoid hardships is to pick a particular command and read the entire text from the manual, this way you will be able to tell if the documentation is understandable.

One thing you should search for in the documentation (or on the program disk) is a separate tutorial. The tutorial should not only lead you step-by-step through the basic operation of the program, but should also provide a real-world example. I understand a program much more quickly when I see precisely how the program works with examples of the kind of work I do.

Another thing to consider when you shop for software is the intuitiveness of the program's operation. Most people want to be able to sit down, turn on the computer, and start using the program without ever opening the manual. If you are familiar with the general category into which the program falls — financial modeling, word processing, data base, or graphics — a truly intuitive program should provide enough information on the screen and in the drop-down menus to lead you right away through a simple application of the program.

When you first try a program, take a moment to look at the opening screen to make sure the visual environment suits the work you intend to do. Next, drop down each menu and study the options. Are they grouped logically according to the name of the menu? Do the options make sense to you in the context of the program? Are they right for the application? Or are they ambiguous?

Select menu items followed by dots (such as Save as . . . , Open . . .) to study the dialog boxes the menus call up. Not only should the dialog boxes offer you many choices (including the Cancel option), but the choices should be clearly labeled so you understand them.

Finally, try to work with the program without studying the documentation. You might not get too far, but the further you get, the more intuitive the program's operation will be for you. That means that even after you have studied the documentation, you will be able to find your way out of difficulties by searching for a menu choice, rather than tearing through the manual for help.

ST software is more diverse and plentiful than in the early days. It is very important for you to be critical and selective in your choices. Put a prospective purchase through its paces on precisely the kind of work you do, whether it be for college coursework or a board of directors presentation. Steer clear from programs that are more show than go. Embrace those that do the job elegantly and productively. The more you demand of software developers, the further they will advance the state of the art of ST programming.

And that's something we will all benefit from.

— Buddy Hammerton

ACE POLL

In the September issue of ACE we printed a poll to our readers on a number of areas concerned with their current Atari interests and the use of their computers. It might be interesting to combine our poll results with similar polls conducted by other user groups. I'm sure the combined results will be interesting to product developers for the 8-bit line.

The greatest number of our readers are 8-bit Atari users — which is really not a surprise. Most of you encourage us to continue covering the 8-bit machines. Some readers even point out that most of our recent issues contained more ST news than they wanted.

It is true ACE has devoted a lot of space to the new kid on the block. On the other hand, new products for the 8-bit have not been released nearly as rapidly as ST products. However, you can be sure 8-bit products worthy of note will be reviewed in our newsletter. For example, the fantastic new Turbo Basic will receive ample coverage as will the 8-bit 3½" drives if and when they become available.

An overwhelming number of your responses asked for more product and program reviews. Since this is a major purpose of our newsletter, readers may rest assured our reviews will continue and hopefully increase as more new programs hit the market.

Several readers suggest ACE release a series of Video Cassettes intended for members interested in learning computer techniques as well as programming in various languages. This is an interesting idea worthy of considerable thought. We will not take on a project of this magnitude lightly.

The staff of the ACE Newsletter thanks those of you who did respond for your valuable input. We read your notes to us. We heard you.

— Graham Smith - ACE

DEGAS ELITE

The original Degas program has been a best seller for BATTERIES INCLUDED. **Degas Elite** ($80) is an update offering many tools and extensions not available in the original Degas.

This is a good program. Tom Hudson has done a fantastic programing job and the documentation is a model of clarity. It becomes immediately evident to one that this program is vastly superior to Degas as well as the currently available competition.

As a graphic artist and teacher by profession, I appreciate the 8 separate work screens available in Degas Elite. This may seem excessive to some, but I find it offers plenty of room to try out various effects on my images without the risk of making fatal mistakes.

The most significant improvement in this program is the way it handles blocks. It is now possible to stretch, distort, scale, invert, rotate an image into virtually any practical size and angle — without destroying it's identity. Although some care must be taken, the ease of use of all of these options is remarkable. I particularly find the "rotate" command to be helpful in constructing a larger image of many overlayed parts.

The animation command incorporated into Degas Elite is more complete than NEO and easier to use than Paintworks — alias N-vision. Used in combination with other commands, I am able to create some highly unusual animation effects.

The color control has been improved tremendously. For example, you can now see all 512 available color under the pick command, but if you choose you may "mix" a particular color individually. There is also a change command which allows you to do some unusual color substitutions and switches. It is also possible to pick two differing hues and have the computer automatically and instantaneously mix all the intermediate steps between them. Clicking on a command called cycle enables you to draw or paint a range of colors in succession.

The file structure and disk I/O enables the user to load in some common but differing formats such as NEO. You can load in a complete picture, just the color pallet, or just the image . . . as well as save and load "blocks." This feature is very user friendly as the program automatically puts the correct extension on your respective loads and/or saves.

THE DEGAS ELITE program contains a new slide show program which permits viewing from several drives concurrently as well as a hard disk setup with variable delays. All animation and color effects work automatically on boot up.

Although there are many other features, space doesn't permit detailed descriptions. Whether the power in this program justifies the price tag of $80 depends upon what you intend to do with the program. If you just want to dabble and play, you won't need the power of Degas Elite. On the other hand, if you are serious in your approach to computer graphics, this is a wise investment. According to one dealer, there is an upgrade policy in which BATTERIES INCLUDED will send, at a reasonable price, the newer Degas to registered owners of original program. At any rate, I consider this an impressive ST program.

— Graham Smith

SOLAPAK

First, let me start this review with an appology to the club, newsletter, and to the authors of Solapak. I was given an updated copy of the NEW updated version of Solapak and am only just now getting my review in.

If you have the older 1.0 version of Solapak, throw it away, as the new version is head and sholders above it. The changes are readily apparent from the boot up. The new documentation is much cleaner and easier to read. It takes you through the start-up in logical steps so even the most inexperienced user can follow it. They have also added instructions on how to make the spooler work with both First Word and ST Writer.

One of the many improvements is the ease with which the Ram Disk size is changed. The owner no longer has to go into ST Writer documentation, it can all be done on your back up disk. The one cumbersom feature is that you must swap disks from the boot up disk to the program disk if you change sizes. This is a minor problem concidering the origional method.

The only real complaint/suggestion that I have is — I wish it were easier to print out just the boot-up instructions from the documentation instead of having to print out the whole Docs. Being a novice, I like to have these in front of me so I don't blow it two or three times.

I have put the screen saver function on several of the disks that I have, including my game and word processing disks. There was one minor glitch in use, created by myself, and not the fault of the software. I did not explain to my wife what the Solapak boot-up menu would look like. One day she got out the First Word disk to work on it, and found a strange auto folder menu on the screen. While she was pondering this new item, the screen went dead. I think she almost panicked, and as luck would have it I called home at this time. I explained to her this program is designed to protect the screen from burn in, and all she had to do was press any key and the screen would come back on. I have the delay time set for 90 seconds, it can be shortened to the users convenience.

I again want to say I think the screen saver function security alone is probably worth the cost of this program. I have not had a lot of ocacasions to use the spooler, and I find a Ram Disk an essential part of goofing on my trusty ST.

— Mike Rogers

CHAOTIC ATTRACTORS

or the attraction of the unknown by the unknowing

What follows is a mystery to me. Last year I came across a computer puzzle in the Australian newspaper which very briefly outlined an area of mathematical research aided by the generation of computer graphics. As you all know only too well, this is enough to start me thinking and to manipulate the computer for days on end. Well, the final outcome is this: I have working programs, disks full of screensaves, lots and lots of papers from the many hours I spent fossicking around the mathematical libraries in the various universities and very little theoretical understanding of what is happening and why. So, not to be outdone I have formulated my own theory!!! But really, I don't understand any of it, so if anyone reading this does, HELP! Send me a postcard or something, my family and friends have suffered enough.

Fractal attractors, Fractal (chaotic) evolutions or the theory of strange attractors and of chaotic (or stochastic) evolution. And this is just the name of the area, see why I am at a loss? The theory of attractors is concerned with the temporal evolution in time of points situated in an invisible, abstract, representative space. This area took off in a real way with the study of turbulance in Ruelle & Takens in 1971.

The notion of an attractor: The "orbit" followed by the motion of a small ball put inside a funnel beginning with wiggles which depend on its final position and velocity, but converging eventually to the funnel's tip; if the ball is bigger than the funnel aperture, it comes to rest at the tip. The tip is a stable equilibrium point, or a stable fixed point, for the ball. The funnel's tip could be called an attractor. A physical system may also have a stable attracting circle or ellipse, e.g., it is believed that the solar system is stable, or the Earth's orbit, if perturbed, might eventually be "attracted back" into its present orbit.

The notion of a repeller: A ball can be poised in an unstable equilibrium on a pencil's point. When the initial position is near this equilibrium, the ball seems pushed away, before converging to a stable equilibrium elsewhere.

This is about as far as I managed to follow the theoretical papers.

My theory is really quite simple. It can be seen that when both the real and imaginary values are zero, the equation produces a ring of circles. The underlying question of course is, are they in fact circles on a flat plane or do they represent a sphere, a funnel, or something else?

If one assumes it is a flat plane and if one thinks of iron filings being laid down in the same pattern then one can cope with the changes in a concrete form as the real or imaginary values are changed.

POINTS of OBSERVATION are as follows:

When the imaginary value: i) is zero the pattern is distributed symmetrically around the y axis; ii) is positive (i.e., between 0 and 1) the pattern is stretched and turned to the right forming two new centres; iii) is negative (i.e., 0 and -1) then the pattern is stretched and turned to the left forming two new centres.

When the real value: i) is zero the pattern is distributed symmetrically around the x y axis; ii) is negative the pattern elongates downwards forming two new centres and becomes less dense.

It seems as if a similar distribution takes place when the real value is positive, and one might logically assume the trend is an upward movement, but I have not investigated this fully as yet.

There seems to be a direct relationship between the two values. The smaller the real value the less tolerance in the movement of the imaginary value. At a real value of -.6 and an imaginary value of zero there is a symmetrically dense pattern (see fig. 1). At a real value of -.6 and an imaginary value of .2 the pattern starts to disintegrate. An interesting observation in the area of real -.6 happens between the imaginary values of .175 to .2 as this is where the greatest movement occurs (i.e. there is a tolerance level of only .025).

The closer the real value is to zero the further away from zero the imaginary value can be moved before the pattern dissipates. As the real value moves away from zero the less tolerance the imaginary value has and therefore dissipates at a faster rate and at an earlier stage which leads me to believe it is not a representation of a flat plane, but of a sphere. The disintegration of outer edges as the limits are approached are a clue to the true nature of the object, but as yet I have not been able to unravel the mystery. It is through this behaviour that I believe it is a dynamic system behaving in a rational manner.

With this understanding, if you now start to think of the pattern (particles) within a fluid tank in a 3D environment the movement of the real coordinate together with the imaginary coordinate you may be able to visualise the movement within the dynamic system to create the patterns in a three dimensional form.

I give you this halfbaked, undercooked theory and a working program in monochrome for both the ST and the 800. I have not had the time nor the inclination to run this program in colour on the ST, but it has been run in colour on the 800. Personally, I feel the best representation of the problem and associated graphics, at this stage at least, is in monochrome. As you play around with this and develop your own theories and offshoots to the program, have a thought for the confusion I have gone through trying to understand it. If you come up with any interesting observations or theories please let me know. At this stage I have spent most of my time trying to formulate what is happening and why. To do this I have concentrated on mapping the whole (using offsets of -1,-1). But, as with the Mandelbrot set you can zoom into the areas for details, which should reveal some very interesting areas.

The ST version of the program together with some of the screensaves are available from the ST librarian (monochrome only) for $10 a disk.

VARIABLES:

IT — Iterations; ZOOM — Scale factor; RE — Real constant; IM — Imaginary constant; X1 — X offset; Y1 — Y offset; LIMIT — The limit of power.

FRACTAL GENERATOR

FRACTAL GENERATOR by Martin Dickens and Howard Chalkley from GST Holdings Price 19 pounds Sterling. Reviewed by Rita Plukss.

If you want to explore the Mandelbrot set without really trying, then this is the program for you. FRACTAL GENERATOR (written in C) produces 4"x5" pictures of any given area within the Mandelbrot set at any given side value in a minute or two. No more waiting 12 hours or so to see what I have discovered in a certain area — instant gratification, all the pain has been removed!

Before I start this review I want to mention a few personal "gripes" about the program. Having spent a large part of my recent life lost within this area exploring many parts of the Mandelbrot set and archiving many disks with slide shows I would have liked to have seen two inclusions within this program.

1. The co-ordinates for Acorner and Bcorner (bottom left starting point) together with the side value. I.e., EXACTLY where in the set I was and at what magnification. This would have been easy to include as the values are needed for the calculations to begin, and there is enough room on the screen to provide this information.

2. The ability to save a full screen and produce a slide show of a set of full screens. Again an easy inclusion at the stage of writing.

Having said this, on with the review. FRACTAL GENERATOR is very user friendly, even with the scanty documentation which accompanies it. It can be used with either monochrome or colour ST systems, although I do not recommend it for use with a monochrome setup as it does not produce varying shades of grey (or black and white, as our homegrown versions on the 800 and ST), but each of the 16 assigned colours have been designated a fill pattern. The result is very patchy and hardly worth the effort. Short cuts never lead to quality and this part of the package was a short cut to include the monochrome systems within their sales area. There can be no other explanation for it. The colour program is EXCELLENT and worthy of all the praise I can give it, with a few exceptions.

Start up your ST in low resolution, load the fractal program and then load the full Mandelbrot set (ADAM). Using the mouse drag a rubber box around the area you wish to magnify, and that's it. Hey Presto! There is the new area in its own window. FRACTAL GENERATOR defaults to Medium resolution and low precision, that is, it is chunky and quick, but these defaults may be changed using the drop down menus.

To start working with FRACTAL GENERATOR you may select either to DISPLAY previously generated windows (I can only do this as PANELS — neither the Branch nor the Tree options work for me — I cannot get them to change from the ghosty writing to activate them. If anyone knows how, please let me know) which must be loaded separately and in the correct zooming sequence, otherwise it will not work. Or, you may select to GENERATE your own windows starting from the original set or any previously loaded window.

As you progress deeper into the set many marvelous sights await you, but you will only be able to save your discoveries if you have the patience and presence of mind to save each newly generated window as you go along, and it is a wise idea to sequence your names. e.g., MAN1, MAN2, MAN3 etc., otherwise all is lost when you turn off your computer.

The GST FRACTAL GENERATOR tracks the sequence of zooming by using a family tree concept. The newest window is always the child, the previous window the parent, then the grandparent and great grandparent and so on. You can go on forever, or in practical terms until you run out of RAM, but only the last four windows will be displayed on your screen. The authors say FRACTAL GENERATOR has a magnification factor of up to 8 million times. I cannot verify that, but I did run out of RAM on my 1 meg ST before the magnification gave out — so let's hear it for zooming ability! Once you have your desired window on the screen (I use low res, low precision) you may then choose to redraw the child window at a higher resolution and or precision by choosing the OPTION and selecting REGENERATE from the COMMAND menu. This gives a higher quality graphic. When you are satisfied with what you have and want a better look, save the window and then activate the BLOW UP option for a full screen view of this window. Unfortunately this cannot be saved to disk, which is a pity, but the time it takes to generate the full screen (an hour or so depending on the area) is worth the wait. The clarity is excellent. It starts to rival some of the photographic slides I have from Cornell University.

The last thing left to tell you about is the RECONTOURING and recolouring options. You may, at any stage select your own points where colour changes are to be made (just like our 800 version). After selecting your colour change counts you may RECONTOUR your child window in your new colour selection. One minor point here, the iteration level is set at 100. This could have been left as a variable for the user to set the iteration level, thereby allowing more detailed work to be accomplished.

At this point I must add that all the source codes have been included on the disk, so all my "gripes" could be overcome by rewriting the program. But, I know nothing about C and do not have GST C. So, I am stuck with the original program. GST take great pains to point out that they hold copyright and have all rights reserved and therefore any changed and or modified versions cannot be publicised. This does tend to stifle further interest. Cornell University (Artmatrix) have reserved rights on this complete area. They allow modifications and exchanges of modification etc. to their programs, on the proviso that they are NOT SOLD. They sent me their program listings in FORTRAN. Maybe I should stick to that?

In conclusion, FRACTAL GENERATOR is a very versatile program. You are not locked in to the program, but are free to explore and manipulate, and at the speed of a hare, not a tortoise! I can thoroughly recommend FRACTAL GENERATOR to any one who has even the slightest passing interest in the Mandelbrot set as all the time and effort previously required to investigate the set have been dispensed with and you can now do it at your leisure or on the "fly."

— Rita Plukss

```
10 REM CHAOTIC ATTRACTORS
20 REM RITA  (adapted from THE AUSTR
ALIAN 1985)
25 REM for the Atari 800
30 REM MELBOURNE (MACE) OCTOBER 1986

40 REM ******************************

45 REM ******************************

50 ? CHR$(125)
55 GOSUB 11000
57 ? CHR$(125)
60 GOSUB 370
70 INPUT IT,ZOOM,RE,IM,X1,Y1,LIMIT
80 GRAPHICS 8+16:COLOR 1:SETCOLOR 2,
0,0
90 U=1:LIMIT=2^LIMIT
100 FOR P=1 TO 190
110 FOR Q=1 TO 310
120 A=P/ZOOM+X1:REM START VALUE
130 B=Q/ZOOM+Y1
140 REM
150 REM FIND OUT HOW MANY ITERATIONS
 (IT) ARE NEEDED FOR SUCCESSIVE VALU
ES OF A AND B
160 REM ARE ALMOST THE SAME (WITHIN
2^LIMIT).  GIVE UP IF EITHER GETS TO
O BIG.
170 REM
180 REM
190 FOR I=1 TO IT
200 A1=(A+B)*(A-B)+RE
210 B1=A*B
220 B1=B1+B1+IM
230 IF A1>U OR B1>U THEN GOTO 340
240 IF ABS(A1-A)<LIMIT AND ABS(B1-B)
<LIMIT THEN GOTO 320
250 A=A1:B=B1
260 NEXT I
270 REM
280 REM
290 REM SHOW THE NUMBER OF INTERATIO
NS AS A BLACK (ODD) OR WHITE (EVEN)
DOT.
300 REM
310 REM
320 IF I/2=INT(I/2) THEN PLOT Q,P
330 REM AND GO ONTO THE NEXT SCREEN
POINT
340 NEXT Q
350 NEXT P
352 POKE 53279,8
353 FOR TIME=1 TO 10:FOR X=10 TO 0 S
TEP -0.3:SOUND 0,0,2,X:NEXT X:NEXT T
IME
355 IF PEEK(53279)=5 THEN GOSUB 1200
0
360 GOTO 355
370 ? "TRY THESE FOR STARTERS"
380 ? :?
390 ? "MAX NO. OF INTERATIONS (IT)
 50"
400 ? "SCALE FACTOR (ZOOM)
160"
410 ? "REAL CONSTANT (RE)
 .2"
420 ? "IMAGINARY CONSTANT (IM)
 .3"
430 ? "X OFFSET (X1)
  0"
440 ? "Y OFFSET (X2)
  0"
450 ? "LIMIT POWER OF 2^LIMT
 -10"
460 ? :? :?
470 ? "EXPERIMENT WITH RE AND IM TO
START WITH"
480 ? "RE AND IM CHANGE THE PATTERN"

490 ? :?
500 ? "ENLARGE PATTERN BY INCREASING
 ZOOM"
510 ? "CENTRE PATTERN ON SCREEN BY S
ETTING X1 AND Y1"
520 RETURN
11000 REM
11010 DIM A$(15),B$(15)
11040 ? :? "Once design is complete,
 press SELECT to save to disk.  The
default name is SPIRAL.PIC"
11150 ? :? "Enter Filename to save d
esign":INPUT B$
11160 P=LEN(B$):IF P=0 THEN A$="D:SP
IRAL.PIC":GOTO 11200
11170 A$(1,3)="D:":FOR X=3 TO P+2:A$
(X,X)=B$(X-2,X-2):NEXT X
11180 A$(P+3,P+6)=".PIC"
11200 RETURN
11201 REM ----------------------------
```

```
12000 REM SAVE TO DISK ROUTINE
12400 CLOSE #1:OPEN #1,8,0,A$
12410 S=PEEK(88)+256*PEEK(89):TOP=S+
7680:BS=TOP-S
12420 HI=INT(BS/256):LO=BS-(HI*256):
POKE 850,11:POKE 852,PEEK(88):POKE 8
53,PEEK(89):POKE 856,LO:POKE 857,HI
12430 D=USR(ADR("hhh■LV■"),16):CLOSE
 #1:REM * and d are INVERSE
12440 FOR TIME=1 TO 10:FOR X=10 TO 0
 STEP -0.3:SOUND 0,0,2,X:NEXT X:NEXT
 TIME
12450 RETURN
```

```
5 REM SCRENLOD.LST
6 REM REF COMPUTE OCT 85 P10
7 REM MY VERSION... THERE IS
8 REM A SAVE PROG TO GO WITH
9 REM THIS....
10 REM SCREEN LOAD ROUTINE SETUP
15 CLR
20 DIM A$(15),CREG(9):AUX=4:MODES=20
0:NAME=500:SCRENLOAD=17000
30 FOR A=1536 TO 1542
40 READ B:POKE A,B
50 NEXT A
60 DATA 104,104,104,170,76,86,228
90 REM
100 GOSUB MODES
110 GOSUB NAME
112 IF MODE()15 THEN GRAPHICS MODE
115 IF MODE=15 THEN GOSUB 300
120 GOSUB SCRENLOAD
130 GOTO 16000
200 ? :? "■WHEN YOU HAVE FINISHED VI
EWING "
205 REM
210 ? "PRESS THE SELECT KEY TO LOAD
"
220 ? "ANOTHER PICTURE. "
230 ? :? "WHICH GRAPHICS MODE "
240 ? :? "7 8 9 10 11 15";:INPUT MOD
E
260 IF MODE=7 THEN MODE=23
270 IF MODE=8 THEN MODE=24
290 RETURN
300 REM SET UP GR.7+ SCREEN
305 FOR R=0 TO 8:CREG(R)=PEEK(704+R)
:NEXT R
310 GRAPHICS 8+16:DLIST=PEEK(560)+PE
EK(561)*256:POKE DLIST+3,78
315 FOR R=0 TO 8:POKE 704+R,CREG(R):
NEXT R
320 FOR CHANGE=DLIST+6 TO DLIST+204:
IF PEEK(CHANGE)=15 THEN POKE CHANGE,
14
330 IF PEEK(CHANGE)=79 THEN POKE CHA
NGE,78
340 NEXT CHANGE:POKE 87,7:RETURN
490 REM
500 REM GET NAME ROUTINE
510 REM
520 ? :? "WHAT FILE DO YOU WISH TO S
EE?"
530 ? :? "TYPE D:FILENAME.PIC "
540 INPUT A$
560 RETURN
15990 REM
16000 REM WAIT FOR SELECT KEY
16010 REM
16020 POKE 53279,8
16030 IF PEEK(53279)=5 THEN GRAPHICS
 0:GOTO 10
16040 GOTO 16030
17000 REM
17010 REM SCREEN LOAD ROUTINE
17020 REM
17030 OPEN #1,AUX,0,A$
17040 POKE 852,PEEK(88):POKE 853,PEE
K(89):POKE 856,220:POKE 857,30:POKE
850,AUX+3
17050 A=USR(1536,16)
17070 CLOSE #1
17080 RETURN
```

STar RAIDERS

Star Raiders (Atari, $35) for the ST is very similar to the original which made the 8-bitters turn their heads to say, "Wow! How did they get the machine to do that?" This new version for the ST is no exception. The stunning graphic display is very well done. The main screen shows you a heads up display (HUD), that is, a view out through the front window of the ship you are piloting. The bottom of the screen shows you the onboard status. Also, the middle of the bottom is where the Galactic Map, Aft View, and Long Range Scan views are located.

The bad guys take on another dimension with the illusion of 3-D. This looks very real. The ships appear as solid objects, and are tougher to destroy for you have to be able to judge distance to target. The Starbases take on another dimension, also. They also appear as solids, even the little drone robot which repairs your ship while you are docked at a Starbase is a solid object. Another nice touch is the Starbases rotate in front of your eyes. Asteroids also spin on their axes. You even get a 3-D view of your ship's exterior showing you where the damaged areas are. The new weapons photons are not of the sparkling ball type. Instead they are of the spiraling, sparkling, circle kind. Tee hee.

The program is easy to use. The same keys used on the 8-bits are used to drive your new Starship. You will need to find an old joystick to steer your vessel.

There seem to be a few of those nasties out there who take several direct hits before their shields go. No problem, right? With the use of your trusty computer tracking this should be no problem. Well. . . .

Summing up, this is a must for you avid gamers who like the fast action type of game. This one will not be seen, in my opinion, in an arcade. It's too good for that. My hat's off to the programmers and graphic programmers for this one.

— Stephen Warn

NEW BEST OF ACE FOR 8-BIT AND ST OUT NOW

ASSEMBLY

Before I describe this months assembly routine, I want to make a couple points on how to use the previous routines. You have two approaches. You can assemble the programs and replace the modules in your existing C or Pascal runtime library (if it will allow you) or you can change the name slightly so it won't conflict with the library routine. For example, you could use Strcpy() instead of strcpy() for the assembly language version of the routine. By using the assembly routine instead of the one provided in the runtime package, you can be assured of the fastest running routine taking the least amount of memory. Most of the routines will work on ANY 68000 computer. char *btoa((long) val, base); takes a long signed integer and converts it into any base. The same routine is used to convert a number to binary, decimal, hex, or any other base between 2 and 40. It returns the address of the string containing the ASCII equivalent of the number. The routine uses a long division routine originally developped by Dr. Arthur Norman. This routine will be used a lot in future functions such as printf and any time a function needs to output a number. For the more advanced programmers using the Alcyon compiler — you can modify this to replace the unsigned long division and modula operations (ldiv and lrem).

Have questions or comments? Is there a particular function you'd like to see done in assembly? Drop me a line — if you want a personal response (sounds like Dear Abby, doesn't it?) include a stamped, self-addressed envelope. Send to: Ralph E. Walden, 1821 Jefferson, Eugene, OR 97402.

ASSEMPRO

There is a common myth that it takes a much longer time to develop a program in assembly then in C. I refer you to an article in the October issue of Computer Language which indicats that writing in assembly usually added only 10% to the total development time. Then you should take a look at ASSEMPRO from ABACUS Software. In C, if you wanted to print out "Hello World," it takes you 4 lines including the stdio.h file. Under most compilers, it takes you a minute to generate a running program of 7,000-14,000 bytes in length. Using ASSEMPRO, it takes 6 lines, is assembled and ready to go in 5 seconds, and generats a program of only 66 bytes. ASSEMPRO is a macro assembler, complete with 288 macros to do all and more of the functions found in a standard C package. Calling a macro is as easy as calling a function in C — you just enter the name, and the parameters you want to pass to it. And of course you can create your own macros just as you might create functions in C or Pascal.

ASSEMPRO.PRG is a single program which includes the editor, assembler, and symbolic debugger all of which work interactively with each other. You can assemble from a file in memory or disk. To speed things up even more, the assembler will stop on an error, let you correct the line, and continue on assembling (after saving the correction). Using the debugger you can trace through the program, using the labels from the program you just assembled. You can set any number of breakpoints, single step, or stop only on branches. You can display the registers, or up to 16 effective addresses so you can easily keep track of how your program affects variables. This makes debugging much easier than with C or Pascal since you can see exactly what you wrote, and can easily keep tabs on important variables while you trace through a program.

Like most editors using the GEM window, cursor movement can be rather slow. ASSEMPRO compensates for this by adding such features as shift cursor going to the next label. The editor is definitely customized for writing assembly programs. For example, it contains a drop down menu telling you how to call each of the 288 macros, and you can also include information about your own as you write them. Another section will tell you what addressing modes are available for each instruction. Once you learn all the commands, you can set up 10 function keys to do some of the work as a single keystroke. A novel feature is that pressing shift and the function key tells you what the function key will do, or any other message you decide to put in.

ASSEMPRO generates stand alone programs. It is designed so you can create your own libraries either through macros or actual object code. It will not, without a great deal of work, generate code to be used by a higher level language. It might be possible, but probably more work than it's worth, to generate a macro library to work with the assembly code produced by the Alcyon compiler. It will not replace the assembler in a C or Pascal package. If you want to write extremely small and fast programs, this is definitely a product worth looking at.

— Ralph Walden

```
* btoa((long)val,base)
* returns address of string
* containing ASCII value of val
* Can use any base from 2-40
__btoa:
 move.l 4(sp),d0
 move.w 8(sp),d1
 ext.l d1
 move.l d1,__base
 movem.l d3/d4,-(sp)
 lea __strbuf,a1
 move.l a1,a0
 lea H__table,a2
 add.l †0,a1
 clr.b (a1)+
 tst.l d0
 bpl.s itoalp
 move.b #'-',(a0)+
 neg.l d0
itoalp: move.l __base,d1
 * usigned 32/32 divide
 bsr ddivu
 * convert it and save it
 move.b (a2,d1),(a1)+
 * anything left?
 tst.l d0
 * till we get it all
 bne.s itoalp
 * reverse the string
l8: move.b -(a1),(a0)+
 bne.s l8
 lea __strbuf,a0
 move.l a0,d0
 movem.l (sp)+,d3/d4
 rts
 * Division routine by
 * Dr. Arthur Norman
 * Returns quotient in d0
 * Returns remainder in d1
ddivu:
 cmp.l +ffff,d1
 bls.s divx
 cmp.l d0,d1
 beq.s div01
 bls.s div02
 move.l d0,d1
 moveq °,d0
 rts
div01:
 moveq °,d1
 moveq −,d0
 rts
div02:
 move.l d1,d2
 clr.w d2
 swap d2
 addq.l −,d2
 move.l d0,d3
 move.l d1,d4
 move.l d2,d1
 bsr.s divx
 move.l d4,d1
 divu d2,d1
 divu d1,d0
 and.l +ffff,d0
div03:
 move.l d4,d1
 move.l d4,d2
 swap d2
 mulu d0,d1
 mulu d0,d2
 swap d2
 add.l d2,d1
 sub.l d3,d1
 bhi.s div04
 neg.l d1
 cmp.l d1,d4
 bhi.s l14
 addq.l −,d1
 bra.s div03
div04:
 subq.l −,d1
 bra.s div03
divx:
 movem.w d0/d2,-(sp)
 clr.w d0
 swap d0
 divu d1,d0
 move.w d0,d2
 move.w (sp)+,d0
 divu d1,d0
 swap d0
 moveq °,d2
```

```
 move.w d0,d1
 move.w d2,d0
 swap d0
 move.w (sp)+,d2
l14:
 rts
 data
H__table: dc.b "0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ .-"
 bss
 __base ds.l 1
__strbuf ds.b 80
```

ST Library

Ralph and I have been working long and hard on the library list. At this time, the list is approximatly 11 pages long and contains information from 22 disks. The list will be constantly updated with information Ralph pulls down from the BBs.

To date, we have the following disks:

1. four utility disks one set up especially for programers;
2. 2 games disks;
3. one disk containing nothing but accessories;
4. a "c" source code disk;
5. a pascal source code disk;
6. 4 tiny pictures disks;
7. 2 graphics disks;
8. a forth disk;
9. and a words disk with word processing programs including version 1.5 of ST Writer;

By this weekend, Ralph and I will have put together a BEST OF ACE ST DISK which should be an outstanding buy for only $10.00. This disk will be featured in this issue of the newsletter just in time for Christmass.

Due to the size of the library list, we have had to increase the price of the from .50 cents to $1.00. This will barely cover the cost of sending it out, but who cares! We're out to help people use their computer.

To order disks from the library, please send your remittance of $10.00 for one disk to:

Ralph Walden, 1821 Jefferson St., Eugene, OR 97402

BEST ST ACE.86

accload.prg: lets you choose which accessories will be loaded at boot up

breakout.acc: a pong style game

desktop.inf: Like the modifications we've made to the desk top?

dirtree.tos: allows you to read and print disk directories

diskmgr.acc: has format,free space,create/delete folder,copy/delete folder, and rename

gclock.doc

gclock.prg: puts a real time digital clock on the top right of screen

july4th.prg: who said you have to wait in the rain to enjoy fireworks

kleido.prg: a kleidoscope on your screen

megaroid.prg: save your space ship from astroids and attacking space ships

megaroid.rsc:

progcalc.acc: our best calculator even programers can use it

reversi.acc: play against the computor to capture the most spaces

scrsaver.acc: allows you to turn the screen off until keystroke

verify.prg: allows you to turn write verification on/off

yahtzee.prg: one playor graphic and color yahtzee game

AUTO: autodate.prg: automatically updates file date and time

macmenu.prg: stops you from accidentally pulling down boxes at the top of the screen push the right mouse button to get past the menu line

RAMDISK: we have included the updated version of the Harris ramdisk as it can now be used on both floppy disks and hard disks! This ramdisk survives system reset and all resolution changes.

rm.txt; rm108.prg; rm174.prg; rm370.prg; rm436.prg; rm501.prg; rm567.prg; rm632.prg; rm698.prg

FORMAT: format.prg: formats a disk in multiple sectors and sizes from 349K to 399K single sided or to 798K double sided.

format.rsc; format.doc

DALEKS: daleks.doc; daleks.prg: a graphic? chase game; daleks.rsc

PCOMMAND: pcommand.prg: our best shell program for the ST

pcommand.txt; pcbatch.doc: documentation for the following batch files

q.bat; query.bat; chkdsk.bat; color.bat; con.bat; free.tos; move.bat; off.bat; param.bat.

2 on 2 Basketball

Gamestar's first ST entry is an impressive sports simulation. It is a very different concept than One-On-One but it also has more depth if not the "cuteness."

The graphics are small scale but excellent with a lot of color and good animation. The basketball court is even wood grained. The respective coaches and benches appear at the sidelines. The referees do not appear although their whistles occur at the appropriate infractions.

One of the highlights of this game is the ability to pass the ball back and forth between team mates whether they be human or computer. All of this take joystick practice but it is all implemented very well.

Playing options include: 1) 1 player with a computer team member of his/her choice taking on 2 computer players; 2) 2 human players taking on 2 computer players; or, 3) 2 human players playing each other with computer team mates.

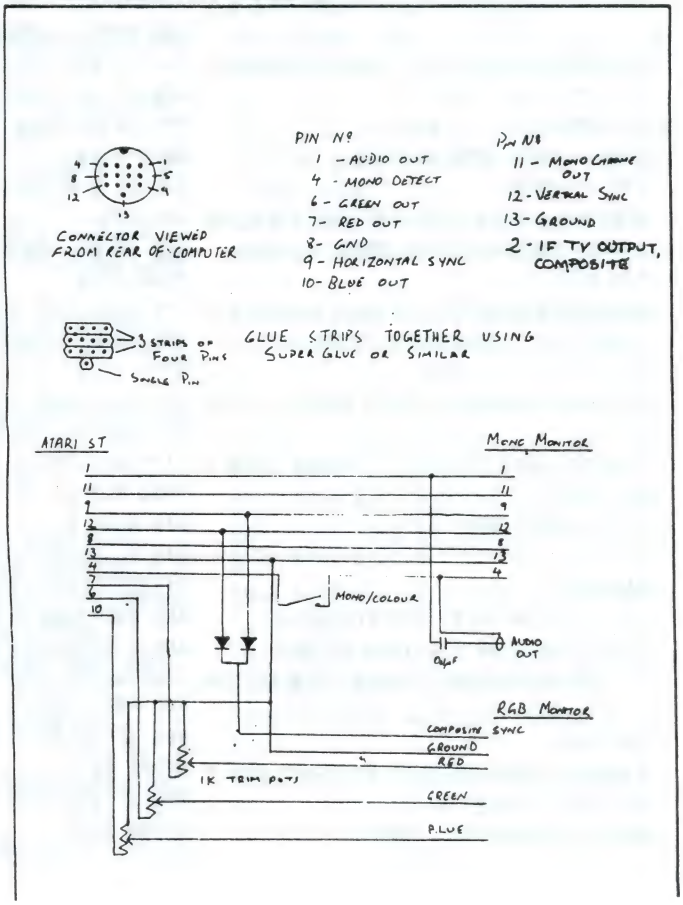
With the first option you can play an exhibition game with any of 23 other computer teams or enter league play against the computer teams and vie for the championship. This is probably the most used option although the novice will have problems at first not being "blown out" by the computer team deadeyes. The computer players fire at around 70% including from long range so it takes a while to be even competitive against the computer. After hours of addictive play and much early frustration, I now win consistently. I can even brag I have "blown away" the computer teams occasionally. You can beat the computer consistently once you learn "all the right moves." Yes Virginia, it can be done.

I strongly recommend this program to those who enjoy good sport simulations on the ST. The game is not the entire game of basketball by any means, but it is a lot of fun and is a good challenge until you "get in shape."

— Graham Smith

FROM LAST MONTH

THE AUSTRALIAN ATARI GAZETTE



CRIBBAGE CON'T

```
100 ┘◆▌┘I :TRAP 1650:POKE 559,0:MG=
0:PG=0:GOTO 2460
110 POKE 559,0:D$=DD$:ME=1:MN=4:YN=4
:POKE A,B
120 J=USR(ADR(U1$),ADR(D$)):J=USR(AD
R(U2$),1633,5):J=USR(ADR(U2$),1639,5
)
130 J=5:FOR I=1 TO 6:Y(I)=PEEK(1633+
J)/10:M(I)=PEEK(1639+J)/10:IS(I)=INT
(M(I)):J=J-1:NEXT I
140 ST=-1:FOR I1=1 TO 3:FOR J1=I1+1
TO 4:FOR K1=J1+1 TO 5:FOR L1=K1+1 TO
 6
150 T=IS(I1)-M(I1):SC=0:IF IS(J1)-M(
J1)<>T OR IS(L1)-M(L1)<>T THEN 170
160 SC=SC+4
170 S=USR(ADR(U$),IS(I1),IS(J1),IS(K
1),IS(L1),20):SC=SC+S
180 IF SC>ST THEN W(1)=M(I1):W(2)=M(
J1):W(3)=M(K1):W(4)=M(L1):ST=SC:C(1)
=I1:C(2)=J1:C(3)=K1:C(4)=L1
190 NEXT L1:NEXT K1:NEXT J1:NEXT I1
200 FOR I=1 TO 4:M(C(I))=0:WI(I)=INT
(W(I)):IF WI(I)>10 THEN WI(I)=10
210 NEXT I:U=PEEK(1645)/10:US=U-INT(
U):POKE 559,34:GOTO 450
220 T=(S(1)-INT(S(1))):SC=0:POKE A,B

230 FOR I=2 TO 4:IF (S(I)-INT(S(I)))
<>T THEN GOTO 270
240 NEXT I
250 IF T=US THEN SC=SC+1
260 SC=SC+4
270 FOR I=1 TO 4:IF INT(S(I))=11 AND
 (S(I)-INT(S(I)))=US THEN SC=SC+1
280 NEXT I
290 S=USR(ADR(U$),INT(S(1)),INT(S(2)
),INT(S(3)),INT(S(4)),INT(S(5)))
300 SC=SC+S:RETURN
310 SC=0:IF M(8)<1 THEN M(8)=T:RETUR
N
320 FOR RZ=0 TO 8:IF T<>M(RZ) THEN G
OTO 340
330 SC=SC+2:NEXT RZ
340 Q=Q-1:M(Q)=T:IF SC=6 THEN SC=12:
RETURN
350 IF SC=4 THEN SC=6:RETURN
360 IF SC>0 OR Q=7 THEN RETURN
370 IF ABS(T-M(Q+1))>8-Q THEN RETURN

380 RW=8
390 R$=Z$:FOR K2=0 TO RW:R$(K2,K2)=C
HR$(M(K2)):NEXT K2
400 T=USR(ADR(U2$),ADR(R$),7)
410 FOR L=8-(RW-Q) TO 7:IF ASC(R$(L,
L))-ASC(R$(L+1,L+1))<>-1 THEN GOTO 4
30
420 NEXT L:SC=RW-Q+1:RETURN
430 RW=RW-1:IF RW<Q+2 THEN RETURN
440 GOTO 390
450 X=1:Y=0:CS=(Y(1)-INT(Y(1)))*10:C
D=INT(Y(1)):GOSUB 1900:POSITION 4,7:
? "1"
460 X=9:Y=0:CS=(Y(2)-INT(Y(2)))*10:C
D=INT(Y(2)):GOSUB 1900:POSITION 12,7
:? "2"
470 X=17:Y=0:CS=(Y(3)-INT(Y(3)))*10:
CD=INT(Y(3)):GOSUB 1900:POSITION 20,
7:? "3"
480 X=1:Y=13:CS=(Y(4)-INT(Y(4)))*10:
CD=INT(Y(4)):GOSUB 1900:POSITION 4,1
2:? "4"
490 X=9:Y=13:CS=(Y(5)-INT(Y(5)))*10:
CD=INT(Y(5)):GOSUB 1900:POSITION 12,
12:? "5"
500 X=17:Y=13:CS=(Y(6)-INT(Y(6)))*10
:CD=INT(Y(6)):GOSUB 1900:POSITION 20
,12:? "6"
510 GOSUB 1950:POKE 559,34:GOTO 520
520 RW=1:FOR I=1 TO 6:IF M(I)>0 THEN
 C(RW)=M(I):RW=RW+1
530 NEXT I:GOSUB 1940:? "Discards";
540 IF D=0 THEN ? " (your crib)?";
550 IF D=1 THEN ? " (my crib)?";
560 GOSUB 2020:POKE A,B:IF N=7 THEN
GOTO 2120
570 IF N<4 THEN Z=N-1:X=1+Z*8:Y=0:GO
SUB 1930
580 IF N>3 THEN Z=N-4:X=1+Z*8:Y=13:G
OSUB 1930
590 C(3)=Y(N):Y(N)=0:T=N
600 GOSUB 2020:POKE A,B:IF N=T THEN
GOTO 2130
610 C(4)=Y(N):Y(N)=0:? "5"
620 FOR I=1 TO 5:IF Y(I)<Y(I+1) THEN
 T=Y(I):Y(I)=Y(I+1):Y(I+1)=T:IF I>1
THEN I=I-2
630 NEXT I
640 X=1:Y=0:FOR I=1 TO 4:CS=(Y(I)-IN
T(Y(I)))*10:CD=INT(Y(I)):GOSUB 1900
650 POSITION X+3,7:? I:X=X+8:NEXT I
660 X=33:Y=13:CS=(U-INT(U))*10:CD=IN
T(U):GOSUB 1900
670 POSITION 35,20:? "DECK"
680 IF INT(U)=11 AND D=1 THEN M=M+2:
GOSUB 2220
690 IF INT(U)=11 AND D=0 THEN P=P+2:
GOSUB 2240
700 GOSUB 1950:GOSUB 2160:PX=1
710 FOR I=1 TO 4:YI(I)=INT(Y(I)):IF
YI(I)>10 THEN YI(I)=10
720 NEXT I:ME=0
730 IF D=0 THEN GOTO 1360
740 IF YN=0 AND MN=0 THEN GOTO 1480
750 IF YN=0 THEN N=7:GOTO 1430
760 IF MN=0 THEN LP=0
770 IF GO<1 THEN GOSUB 1940:? "Your
play."
780 GOSUB 2020:POKE A,B
790 IF N>4 AND N<7 THEN GOSUB 2150:G
OTO 780
800 IF N=7 THEN GOTO 910
810 IF Y(N)<0 THEN GOTO 970
820 SUM=SUM+YI(N):IF SUM>31 THEN SUM
=SUM-YI(N):GOTO 950
830 LP=0:X=1+(N-1)*8:Y=0:GOSUB 1930:
T=INT(Y(N)):GOSUB 310:P=P+SC
840 IF SUM=15 THEN P=P+2:GOSUB 1950
850 X=PX:PX=PX+2:Y=13:CS=(Y(N)-INT(Y
(N)))*10:CD=INT(Y(N)):GOSUB 1900
860 IF SUM<31 THEN GOSUB 1950:GOTO 8
90
870 GOSUB 1940:? "******31******"
880 P=P+2:GOSUB 1950:SUM=0:GOSUB 216
0:GOSUB 2180:G=0
890 YN=YN-1:Y(N)=Y(N)-50:YI(N)=50:IF
 GO=0 THEN GOTO 990
900 GOTO 740
910 FOR I=1 TO 4:IF SUM+YI(I)<32 THE
N GOTO 930
920 NEXT I:GOTO 990
930 GOSUB 1940:? "Are you trying to
cheat?■":GOTO 780
950 GOSUB 1940:? "That's more than 3
1!■":GOTO 780
970 GOSUB 1940:? "You already played
 that card!■":GOTO 780
990 IF YN=0 AND MN=0 THEN GOTO 1480
1000 POSITION 1,21:? BL$:IF MN=0 THE
N GOTO 1380
1010 IF MN=1 THEN GOTO 1200
1020 FOR I=1 TO 4:IF W(I)<1 THEN GOT
O 1040
1030 IF SUM+WI(I)<32 THEN GOTO 1050
1040 NEXT I:GOTO 1390
1050 IF SUM=0 THEN GOTO 1450
1060 IF Q=8 THEN GOTO 1310
1070 IF Q<6 THEN POSITION 1,21:? "I'
m thinking..."
1080 RT=0:FOR F=1 TO 4:IF W(F)<1 THE
N GOTO 1110
1090 IF SUM+WI(F)<32 THEN T=INT(W(F)
```

CRIBBAGE

```
):GOSUB 310:IF SC)RT THEN I=F:RT=SC
1100 M(Q)=-10:Q=Q+1
1110 NEXT F:IF RT=0 THEN GOTO 1130
1120 GOTO 1230
1130 FOR I=1 TO 4:IF W(I)<1 THEN GOT
O 1150
1140 IF WI(I)+SUM=15 OR WI(I)+SUM=31
 THEN GOTO 1230
1150 NEXT I:FOR I=1 TO 4:IF W(I)<1 O
R WI(I)+SUM=21 THEN GOTO 1170
1160 IF SUM+WI(I)<32 THEN GOTO 1230
1170 NEXT I:FOR I=1 TO 4:IF W(I)<1 O
R WI(I)=5 THEN GOTO 1190
1180 IF SUM+WI(I)<32 THEN GOTO 1230
1190 NEXT I
1200 FOR I=1 TO 4:IF W(I)<1 THEN GOT
O 1220
1210 IF SUM+WI(I)<32 THEN GOTO 1230
1220 NEXT I:GOTO 1390
1230 LP=1:MN=MN-1:SUM=SUM+WI(I):IF S
UM=15 THEN M=M+2
1240 T=INT(W(I)):GOSUB 310:M=M+SC
1250 IF SUM=31 THEN POSITION 1,21:?
"****31****           ":M=M+2:SUM=0
1260 X=PX:PX=PX+2:Y=13:C5=(W(I)-INT(
W(I)))*10:CD=INT(W(I)):GOSUB 1900:GO
SUB 1950
1270 IF SUM=0 THEN FOR J=1 TO 100:NE
XT J:GOSUB 2160:GOSUB 2180
1280 W(I)=W(I)-50:WI(I)=-50
1290 IF N=7 AND SUM)0 THEN GOTO 990
1300 FL=1:GOTO 740
1310 FOR I=1 TO 4:IF W(I)<1 THEN GOT
O 1330
1320 IF INT(W(I))=M(8) OR WI(I)+SUM=
15 THEN GOTO 1230
1330 NEXT I:FOR I=1 TO 4:IF W(I)>0 T
HEN GOTO 1350
1340 NEXT I
1350 GOTO 1230
1360 FOR I=1 TO 4:IF WI(I)<5 THEN GO
TO 1230
1370 NEXT I:GOTO 1450
1380 IF N=7 THEN M=M+1:SUM=0:GOSUB 2
160:GOSUB 1950:GOSUB 2180:FL=0:GOTO
740
1390 IF N=7 AND LP=1 THEN M=M+1:SUM=
0:GOSUB 2160:GOSUB 1950:GOSUB 2180:G
OTO 740
1400 IF N=7 AND LP=0 THEN P=P+1:SUM=
0:N=0:GOSUB 1950:GOSUB 2180:GOSUB 21
60:GOTO 990
1410 IF YN=0 THEN N=7:GOTO 990
1420 GOSUB 1940:? "GO":GOSUB 2260:GO
=1:GOTO 740
1430 IF GO=1 THEN GO=0:P=P+1:SUM=0:N
=0:GOSUB 1950:GOSUB 2160:GOSUB 2180:
GOTO 990
1440 GOTO 990
1450 FOR I=4 TO 1 STEP -1:IF W(I))0
AND WI(I)<>5 THEN GOTO 1230
1460 NEXT I:FOR I=4 TO 1 STEP -1:IF
W(I)>0 THEN GOTO 1230
1470 NEXT I
1480 GOSUB 2390:? "K":HE=1:POKE A,B:
IF D=0 THEN GOTO 1730
1510 FOR I=1 TO 5:S(I)=Y(I):NEXT I:X
=1:Y=0:? "K":POSITION 35,3:? "DECK"
1520 FOR I=1 TO 5:C5=(Y(I)-INT(Y(I))
)*10:CD=INT(Y(I)):GOSUB 1900:X=X+8:N
EXT I
1530 GOSUB 220:GOSUB 1950:POSITION 1
,7:? "Your hand. How many points";
1540 GOSUB 1660:IF SC-I)0 THEN ? "MU
GGINS FOR ";SC-I;" POINTS":GOSUB 21
90
1550 IF I)SC THEN POSITION 1,11:? "N
ot with that hand!";BL$:POSITION 1,1
2:GOTO 1540
1560 P=P+I:IF P)120 THEN GOTO 2280
1570 ? "K":D=0:SC=M5:POSITION 35,3:?
 "DECK"
1580 X=1:Y=0:FOR I=1 TO 5:C5=(W(I)-I
NT(W(I)))*10:CD=INT(W(I)):GOSUB 1900
:X=X+8:NEXT I
1590 FOR I=1 TO 5:S(I)=W(I):NEXT I:G
OSUB 220:M=M+SC
1600 POSITION 1,7:? SC;" POINTS FOR
ME":GOSUB 1950:GOSUB 2190
1610 ? "K":FOR I=1 TO 5:S(I)=C(I):NE
XT I:POSITION 35,3:? "DECK"
1620 X=1:Y=0:FOR I=1 TO 5:C5=(S(I)-I
NT(S(I)))*10:CD=INT(S(I)):GOSUB 1900
:X=X+8:NEXT I
1630 GOSUB 220:POSITION 1,7:? "My cr
ib= ";SC;" points":M=M+SC:GOSUB 1950

1640 GOSUB 2160:SUM=0:GOSUB 2190:? "
K":GOTO 110
1650 TRAP 1650:GOTO 1720
1660 ? "?←";
1670 IF PEEK(A)=B THEN GOTO 1670
1680 IF PEEK(A)=62 THEN POSITION 1,7
:? SC;" POINTS";BL$:I=SC:P=P+I:GOSUB
 1950:P=P-I:GOSUB 2190:RETURN
1690 INPUT I:IF INT(I)<>I THEN GOTO
1720
1700 IF I<0 THEN GOTO 1720
1710 RETURN
1720 POSITION 1,11:? "CUTE!";BL$:POS
ITION 1,12:GOTO 1660
1730 D=1:SC=M5:POSITION 35,3:? "DECK
"
1740 X=1:Y=0:FOR I=1 TO 5:C5=(W(I)-I
NT(W(I)))*10:CD=INT(W(I)):GOSUB 1900
:X=X+8:NEXT I
1750 FOR I=1 TO 5:S(I)=W(I):NEXT I:G
OSUB 220
1760 M=M+SC:POSITION 1,7:? SC;" Poin
ts for me.":GOSUB 1950:GOSUB 2190
1770 ? "K":FOR I=1 TO 5:S(I)=Y(I):NE
XT I:POSITION 35,3:? "DECK"
1780 X=1:Y=0:FOR I=1 TO 5:C5=(Y(I)-I
NT(Y(I)))*10:CD=INT(Y(I)):GOSUB 1900
:X=X+8:NEXT I
1790 GOSUB 220:GOSUB 1950:POSITION 1
,7:? "Your hand. How many points";
1800 GOSUB 1660:IF SC-I)0 THEN ? "MU
GGINS FOR ";SC-I;" POINTS":GOSUB 21
90
1810 IF I)SC THEN POSITION 1,11:? "N
ot with that hand!";BL$:POSITION 1,1
2:GOTO 1800
1820 P=P+I:IF P)120 THEN GOTO 2280
1830 ? "K":FOR I=1 TO 5:S(I)=C(I):NE
XT I:POSITION 35,3:? "DECK"
1840 X=1:Y=0:FOR I=1 TO 5:C5=(C(I)-I
NT(C(I)))*10:CD=INT(C(I)):GOSUB 1900
:X=X+8:NEXT I
1850 GOSUB 220:GOSUB 1950:POSITION 1
,7:? "Your crib. How many points";
1860 GOSUB 1660:IF SC-I)0 THEN ? "MU
GGINS FOR ";SC-I;" POINTS":GOSUB 21
90
1870 IF I)SC THEN POSITION 1,11:? "N
ot with that hand!";BL$:POSITION 1,1
2:GOTO 1860
1880 P=P+I:IF P)120 THEN GOTO 2280
1890 ? "K":GOSUB 2160:SUM=0:GOTO 110

1900 POKE 82,X:POKE 83,X+6:POSITION
X,Y:CD=(CD-1)*5+1:C$(9,13)=T$(CD,CD+
5)
1910 C$(37,41)=B$(CD,CD+5):C$(16,16)
=S$(C5,C5):C$(34,34)=S$(C5,C5):? C$
1920 POKE 82,1:POKE 83,39:RETURN
1930 POKE 82,X:POKE 83,X+6:POSITION
X,Y:? BL$:POKE 82,1:POKE 83,39:RETUR
N
1940 POSITION 1,21:? BL$:POSITION 2,
21:RETURN
1950 POSITION 1,9:? "Your score= ";P
;"  My score= ";M;"  D=";P-M;" "
1960 IF M)120 OR P)120 THEN GOTO 227
0
1970 IF M)M1 AND HE=0 THEN GOSUB 222
0
1980 IF P)P1 AND HE=0 THEN GOSUB 224
0
1990 M1=M:P1=P
```

CRIBBAGE CONT

```
2000 IF HE=0 THEN POSITION 1,11:? "S
UM=";SUM;" ":RETURN
2010 RETURN
2020 IF PEEK(53279)=3 THEN RUN "D4:G
AME"
2025 IF PEEK(A)=B THEN GOTO 2020
2030 IF PEEK(A)=31 THEN N=1:RETURN
2040 IF PEEK(A)=30 THEN N=2:RETURN
2050 IF PEEK(A)=26 THEN N=3:RETURN
2060 IF PEEK(A)=24 THEN N=4:RETURN
2070 IF PEEK(A)=29 THEN N=5:RETURN
2080 IF PEEK(A)=27 THEN N=6:RETURN
2090 IF PEEK(A)=61 THEN N=7:RETURN
2100 POKE A,B
2110 GOSUB 2150:GOTO 2020
2120 GOSUB 1940:? "And just where is
 it you want to go?":GOTO 560
2130 GOSUB 1940:? "You already disca
rded that card!"
2140 GOTO 600
2150 GOSUB 1940:? "That's not a comm
and!":RETURN
2160 FOR J=1 TO 8:M(J)=-10:NEXT J:Q=
8:PX=1:GO=0:R$=Z$:IF YN>0 THEN FL=0
2170 RETURN
2180 POSITION 1,13:? BL$;BL$;BL$;BL$
;BL$;BL$;BL$:PX=1:RETURN
2190 POKE A,B
2200 IF PEEK(A)=B THEN GOTO 2200
2205 IF PEEK(A)=47 THEN RUN "D4:GAME
"
2210 POKE A,B:RETURN
2220 FOR J=1 TO M-M1:SOUND 1,32,10,1
5:FOR L=1 TO 5:NEXT L
2230 SOUND 1,0,0,0:FOR L=1 TO 5:NEXT
 L:NEXT J:RETURN
2240 FOR J=1 TO P-P1:SOUND 1,B,10,15
:FOR L=1 TO 5:NEXT
2250 SOUND 1,0,0,0:FOR L=1 TO 5:NEXT
 L:NEXT J:RETURN
2260 SOUND 1,120,10,15:FOR J=1 TO 20
:NEXT J:SOUND 1,0,0,0:RETURN
2270 FOR I=1 TO 100:NEXT I:POKE A,B
2280 ? "K":POSITION 1,10:IF M>120 TH
EN ? "I WIN BY ";M-P;" POINTS.  ";M;
" TO ";P:GOTO 2300
2290 ? "K":POSITION 1,10:? "YOU WIN
BY ";P-M;" POINTS.  ";P;" TO ";M
2300 IF M>120 THEN MG=MG+1:IF M-P>MB
 THEN MB=M-P:D=0
2310 IF P>120 THEN PG=PG+1:IF PB<P-M
 THEN PB=P-M:D=1
2320 POSITION 1,15:? "I have won ";M
G;" game";
2330 IF MG<>1 THEN ? "s";
2340 ? " and you have won ";PG;"."
2350 IF MG>0 THEN ? :? "The most I h
ave beaten you by is ";MB
2360 IF PG>0 THEN ? :? "The most you
 have beaten me by is ";PB
2370 GOSUB 2190:POKE 559,0:? "K":P=0
:M=0:SUM=0:P1=0:M1=0
2380 POKE A,B:GOTO 110
2390 IF SUM=0 THEN GOTO 2420
2400 IF LP=1 OR N=7 THEN M=M+1:GOTO
2420
2410 IF LP=0 THEN P=P+1
2420 GOSUB 1950:W(5)=U:C(5)=U:Y(5)=U
2430 FOR I=1 TO 4:W(I)=W(I)+50:Y(I)=
Y(I)+50:NEXT I
2440 FOR I=1 TO 3:IF C(I)<C(I+1) THE
N T=C(I):C(I)=C(I+1):C(I+1)=T:GOTO 2
440
2450 NEXT I:RETURN
2460 DIM C$(49),T$(66),B$(66),BL$(55
),S$(4),D$(135),W(5),MI(4),YI(4),I5(
6),DD$(135)
2470 DIM C(5),S(5),Y(6),M(8),U$(617)
,U1$(71),U2$(42),R$(8),Z$(8):? "K":A
=764:B=255
2490 T$="ACE  2    3    4    5    6
    7    8    9    10   JACK QUEENKIN
G  "
2500 B$="  ACE    2    3    4    5
  6    7    8    9    10 JACKQUEEN KI
NG"
2510 C$="[illegible]"
2520 S$="[illegible]":Z$="♥♥♥♥♥♥♥♥"
2530 BL$(1)=" ":BL$(55)=" ":BL$(2)=B
L$
2540 DD$(1,1)="A":DD$(135,135)="A":D
D$(2)=DD$
2550 P=0:M=0:SUM=0:P1=0:M1=0
2560 D=0:IF PEEK(53770)>128 THEN D=1
2570 U2$="hh,Lh,Khh,MfM ♥IKHDK+HOKpU
0S*1K/ KH ♥K"Sd♦"
2580 U1$="hh,Lh,L" /T-R),T +H-KfK/K
+eKeKeKeK/K#-R)+,KfK ♥eK(1LI PR),fL&
L""
2590 U1$(66)="♦/UPC♦":U1$(65,65)=CHR
$(157)
2600 U$="hhh,Khh,Lhh,Mhh,Nhh,O)♥,T,U
■♥/■|/■♥5KhK,P-UK♦Ups(5KJ Kh" KPe K
KdLp,JdLP/HP"h♥/&LdMP,JdMP,"
2610 U$(91)="■H♥♥♥/P♦HP ■♥/P-D ■♥/D
♥/&MdNP,JdNP,HP♦■♥/I P,IHP)D ■♥/&NdO
p"UdOP-HP:IHP)D ■♥/Pg)♦■♥/P♦■♥/"
2620 U$(181)="I PI1/PhIHP)D ■♥/P-IHP
UI♦P)J ■♥/P"D♥/Q 0GP♦QHP5"TQ"P:"♦/Ti"
",TP1"I ■♥/I♥P"Q P/Z/P"/TP"
2630 U$(265,265)=CHR$(27)
2640 U$(266)="D/"+T,T#-/I/TP" I"♥/I
♥P|/T,|/5KhK,P UKPwfTfTPan|/-|/IHPL"
":U$(324,324)=CHR$(255)
2650 U$(325)="KhKP 5KI "OU) "KPG"ZKeL
eKeKeNeOL P,fTfT
2660 U$(361)="♦ZK"+eLeKeKeNI P,fTfTZK"+e
KeNeOI P,fTfTZK"+eLeNeOI P,fTfTZK"+eLe
KeOL P,fTfTZL"+eKeNeOL P,fTfT"HZK"
2670 U$(451)="+eL■|/■|/hK,P "+uKI PgT
fTfTPKZK"+eKeNI P,fTfTZK"+eKeOI P,fTfTZ
K"+eKeOL P,fTfTZL"+eKeNI P,fTfTZL""
2680 U$(541)="eKeOL P,fTfTZL"+eNeOI P
,fTfTZM"+eNeOI P,fTfT ■"+X5K ♥/hK,P"=
♥/+uKI PgfTfTPk P)♦"
2690 POKE 752,1:GOTO 110
```

OLDIES BUT GOODIES

INTEREST

```
110 ? "IF YOU TYPE THE AMOUNT OF PRI
NCIPAL   AND THE INTEREST RATE PER Y
EAR, I WILL"
130 ? "SHOW YOU HOW YOUR MO▮-Y GROWS
, YEAR BYYEAR.  TO ▮TOP ME, PRESS TH
E BREAK K▮Y"
150 ? :? "PRINCIPAL";
165 INPUT P
170 ? "INTEREST RATE";
175 INPUT R
180 LET N=1:?
190 ?
200 LET A=P*(1+R/100)^N
210 ? "YEAR = ";N
220 ? "AMOUNT = ";A
230 LET N=N+1
240 GOTO 190
```

SCREEN SAVE

```
1 DIM FN$(17)
2 IN408=8:POKE 764,255:GRAPHICS 0:?
"      SCREEN SAVE OPTION"
3 ? :? "ENTER FILE NAME BELOW - SCRE
EN WILL CLEAR then":? "ENTER L TO GE
T PICTURE FROM DISK FILE or"
4 ? "ENTER R TO RUN PICTURE PROGRAM
then"
5 ? "ENTER E TO STOP PICTURE PROGRAM
 (OPTIONAL) then"
6 ? :? :? "WHEN PICTURE IS DONE ;"
7 ? "ENTER S TO SAVE IT ON A FILE an
d/or"
8 ? "ENTER R TO RESTART PROGRAM"
9 ? :? :? "BUT FIRST ENTER NAME OF F
ILE WHERE PICTURE IS TO BE FOUND OR
STORED as D:NAM or C: =":INPUT FN$
10 REM
11 GRAPHICS 24:COLOR 1:RESTORE
12 FOR J=1536 TO 1558:READ A:POKE J,
A:NEXT J
14 IF (PEEK(764)=40) THEN IN408=8:PO
KE 764,255:GOTO 20
16 IF (PEEK(764)=0) THEN IN408=4:GOT
O 320
18 GOTO 14
20 REM
23 REM
25 P=160:Q=100
30 XP=144:XR=1.5*3.1415927
40 YP=56:YR=1:ZP=64
50 XF=XR/XP:YF=YP/YR:ZF=XR/ZP
60 FOR ZI=-Q TO Q-1 STEP 1
70 IF ZI<-ZP OR ZI=ZP THEN GOTO 150
80 ZT=ZI*XP/ZP:ZZ=ZI
90 XL=(SQR(XP*XP-ZT*ZT))
93 XL=INT(0.5+XL)
100 FOR XI=-XL TO XL STEP 1
105 TRAP 120
110 XT=SQR(XI*XI+ZT*ZT)*XF:XX=XI
120 YY=(SIN(XT)+0.4*SIN(3*XT))*YF
130 GOSUB 170
140 NEXT XI
145 IF PEEK(764)=42 THEN IN408=8:GOT
O 300
150 NEXT ZI
160 GOTO 300
170 X1=(XX+ZZ+P)
180 Y1=YY-ZZ+Q:Y1=191-Y1
182 IF X1<0 OR Z1)319 THEN RETURN
184 IF Y1<0 OR Y1)191 THEN RETURN
195 COLOR 1:PLOT X1,Y1
200 IF Y1)=190 THEN RETURN
210 COLOR 2:PLOT X1,Y1+1:DRAWTO X1,1
91
220 RETURN
230 REM
300 IF PEEK(764)=40 THEN 2
310 IF PEEK(764)<>62 THEN 300
320 POKE 764,255:OPEN #3,IN408,0,FN$

325 POKE 891,128
330 TVAT=PEEK(560)+PEEK(561)*256
340 RAMTOP=PEEK(106)*256
350 TVSIZ=RAMTOP-TVAT
370 SIZHI=INT(TVSIZ/256)
380 SIZLO=INT(TVSIZ-256*SIZHI)
390 TVAHI=INT(TVAT/256)
400 TVALO=INT(TVAT-256*TVAHI)
430 POKE 884,TVALO
440 POKE 885,TVAHI
450 POKE 888,SIZLO
460 POKE 889,SIZHI
500 RES=USR(1536,IN408+3)
510 CLOSE #3:POKE 764,255
520 IF PEEK(764)=40 THEN 2
525 GOTO 520
530 DATA 104,201,1,208,10,104,104,14
1,114,3,162,48,32,86,228,133,213,169
,0,133,212,96,0
```

BANNER

```
10 DIM S$(128),L$(128),SP$(160),PR$(
160),X(7):C=0:CO=1:OPEN #1,4,0,"K:"
15 FOR A=1 TO 160:SP$(A,A)=" ":NEXT
A
20 ? :? "LARGE MESSAGE";:INPUT L$:LL
=LEN(L$)
30 ? "SMALL MESSAGE";:INPUT S$:LS=LE
N(S$)
40 TRAP 40:? "HEIGHT";:INPUT H:IF H<
1 OR H)20 THEN 40
42 TRAP 42:? "WIDTH";:INPUT W:IF W<1
 OR W)20 THEN 42
45 ? "POSITION PAPER--HIT ANY KEY":G
ET #1,A
50 POKE 559,0:FOR I=1 TO LL:IN=0:X=A
SC(L$(I,I)):IF X)127 THEN X=X-128:IN
=1
55 X=X-32*(X<96 AND X)31)+64*(X<32)
60 FOR A=0 TO 7:X(A)=ABS(IN*255-PEEK
(57344+X*8+A)):NEXT A:J=256
70 J=J/2:FOR K=7 TO 0 STEP -1:IF X(K
)<J THEN PR$(CO,CO+H-1)=SP$:CO=CO+H:
GOTO 80
75 X(K)=X(K)-J:FOR A=1 TO H:C=C+1-LS
*(C)=LS):PR$(CO,CO)=S$(C,C):CO=CO+1:
NEXT A
80 NEXT K:FOR A=1 TO W:TRAP 99:LPRIN
T CHR$(1);CHR$(27);"B,1,$"
81 LPRINT CHR$(27);"J,0,960,$"
83 LPRINT CHR$(27);"R,1,$":LPRINT CH
R$(31);:LPRINT PR$(A,H*8):LPRINT CHR
$(27);"U,-9,$":NEXT A:CO=1:PR$=SP$
85 IF J<>1 THEN 70
90 NEXT I:POKE 559,34:? :? :? "AGAIN
?";:GET #1,A:IF A=89 THEN C=0:CO=1:G
OTO 20
92 END
99 POKE 559,34:? :? "YOUR PRINTER IS
 NOT ON, TRY AGAIN":C=1:CO=1:GOTO 45
```

JANUARY MEETING

WED., 14TH

7:30 PM

SOUTH EUGENE HIGH

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